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No. 2

GOV. ODELL ON ERIE CANAL FINANCES.

Gov. Odell of New York in his fourth annual address to the legislature deals very fully with the Erie canal enlargement and advances suggestions whereby the financial burden for its construction may be lessened. The canal policy of the state having been determined, neither factious nor personal opposition, the governor says, should hinder its fulfillment. Unnecessary delay is as undesirable as undue haste. A business-like treatment of every detail is demanded. Verification of the engineer's estimates of the most important and difficult portions of the work by actual bids should be obtained at once. He continues:

"I am advised that the surveys already made will permit an early submission to bidders of plans and specifications for some of the most costly sections. The expert board provided for in the act will be soon appointed by me. I hope to take such action at this initial period of the work as will take the whole project out of political surroundings. Merit should and will be the sole test in the selection of its individual members. That the board may be unhampered in its work it is desirable that the terms of office of its members should be coincident with the period of construction, and that removals should be for cause only upon charges duly sustained. Thus safeguarded and working under the restrictions imposed by the statute and in harmony with the state's officials, this board can be relied upon to properly protect the state's interests. The change in route, the abandonment of the present canal in part, the purchase of other property, should receive careful attention.

"To this end we should not alone purchase the land necessary for the canal itself, but we should also secure such releases as will minimize the claims which may arise as the result of its operation. A board of appraisers of, say, three members should be authorized to effect settlements with owners and thus bring down to actual figures and certainty that which at present is at the best but mere conjecture. Every detail having been provided for, and the accuracy of the estimated cost of the work determined, there will then come the positive knowledge that either the canal can be completed within the sum authorized or that a necessity exists for a greater expenditure. All of these precautions will not delay but will rather hasten the building of the canal and will also serve to allay the fears of all and inspire confidence in the administration of the work. If, as I am firmly convinced, no mistakes have been made, then the most important subject left for the consideration of the legislature is that of providing ways and means for the raising of the money to be expended. While the referendum provides for a yearly direct tax and the payment of the debt in eighteen years, I am sure that the general expectation is that some other method may be devised. To return either to a direct tax or to seriously disturb existing tax laws is far from desirable. New York, with its vast interests and wealth, has resources which would seem to make it almost a profligate use of funds to burden the people with unnecessary interest charges. The present law proposes to pay in eighteen years for interest $54,540,000. If the period be extended to fifty years the expenditure for the same purpose would be $151,500,000. The principal sum in both cases is in addition to be provided for. What is it we seek to escape and what benefits do we derive from this absolute waste of public moneys? New York has a valuation of nearly six billions of dollars. One hundred and one millions of dollars is probably one of the greatest sums ever appropriated for a single public work, and yet in the wisdom of the legislature it should be all levied and collected in a single year the tax would be but $17.12 per thousand of valuation. While this sum is large for state purposes, yet there are but few municipalities in our commonwealth that can boast of so favorable a local tax rate. If the expenditure were spread over ten years, the probable period of construction, the yearly tax would be but $1.71 per thousand. Therefore, in order to escape, or rather to put off for eighteen years the extinguishment of the debt, the intention is to burden ourselves with interest charges equal to 54 per cent. of the principal. True, with mathematical accuracy, the whole proposition is worked out in annual payments, yet the result will be practically as I have outlined. If we could pay this debt in twenty annual instalments without interest, our obligation would call for $5,550,000 annually, or but $2,470,000 in addition to the proposed yearly interest charges. This could be done if the state's revenues from indirect sources were large enough, but unfortunately our present revenues are not sufficient for this purpose.

"If, as I have indicated in prior messages, however, advantage is taken of opportunities to correct some very manifest inequalities in our tax laws, the increased receipts which would result would then in twenty years provide for the total expenditure. But how can this be accomplished, it may be asked? If the state had additional revenues of $5,500,000 annually it could furnish probably all of the money that might be required for the first five years without recourse to the sale of bonds or levies upon the localities. During the last five years of the work, there will be of course a necessity for such a sum as may remain unpaid, or an aggregate of about $75,000,000. The payment of interest if the bonds were issued under the referendum plan would take nearly two-thirds of this new revenue if it were to be paid annually, and therefore no saving would result. It is, therefore, necessary that the interest should be deferred, that is, the bonds to be issued should be of such a character that the principal and interest might be paid at maturity. Such bonds, however, might not prove attractive to investors and it would be necessary therefore to have recourse to the counties in order to perfect and make successful the plan I have in mind for the best method of financing this public improvement."

BIG DECREASE IN BRITISH SHIP BUILDING.

Liverpool, Jan. 4.—As was only to be expected from the continued depression in shipping and allied industries throughout the United Kingdom, the returns of new tonnage built in the various ship building centers during 1903 show a decrease of no less than 302,586 tons, or 18.5 per cent. And singular it is to say that the output from the Mersey, where ship building has for some years past been regarded as a decaying industry, is more than double what it was last year, and this is the only British port that shows an increase over last year's figures. A perusal of the following figures will, however, show the true position of affairs: In the Scotch yards there were built 478,548 tons, against 572,041 tons in 1902; Belfast 115,201 tons, against 155,429 tons last year; Mersey 49,179 tons, against 23,217 tons; north east coast ports, 645,849 tons against 792,269 tons, and the Thames 13,313 tons compared with 38,456 tons. This added to 28,290 tons built in royal dock yards makes a total of 1,330,380 tons as the total output of the United Kingdom, as against 1,632,966 tons last year, a decrease, as before stated, of 302,586 tons. While the prospect of a revival of this trade during the year just entered upon seems yet somewhat remote, there are those to be found who believe that the lowest level has been touched, and a better state of things will develop as the new year advances. A prominent shipping man here observed to me quite recently that what was now required for the shipping and ship building interests to recover their former state of prosperity was rest after the reaction consequent upon the South African war, and a peaceful ending of the Russo-Japanese quarrel. Such a decreased output of tonnage is bound to have some perceptible effect upon freights in due time by proportionately decreasing the excess of tonnage available for the carrying trade, and in this connection it is noteworthy that more ships have been removed from the British register during 1903 than the average of some years past. Whether there be protection, retaliation or free trade in the future trade relation of this country with other nations of the world, one thing is certain, that in shipping circles, at all events, a more optimistic feeling prevails than has been noticeable for some time past, and that the country is being roused to the unequal conditions under which British shipping is carried on against foreign competition. The fiscal controversy has already done more for the British ship owners' cause than any individual effort in parliament. The country is waking up to the ridiculous board of trade restrictions which menace the very existence of our shipping rather than aid its development, and a clean sweep of many of these out-of-date regulations which have, and are still handicapping British ship owners is hopefully looked for in the ensuing session of parliament. And from the manner in which British ship owners are organizing themselves in the present controversy, there seems every likelihood that their power will be felt, both in the present parliament and at the next general election.

SHIP BUILDING RETURNS.

In the calendar year ended Dec. 31 last 1,159 steam and sail vessels of 381,970 tons were built in the United States, compared with 1,262 vessels of 429,327 tons in 1902 and 1,322 vessels of 376,129 tons in 1901. For the six months ended Dec. 31 last the number of new vessels was 571 and the tonnage 177,067 gross, compared with 627 vessels of 171,599 tons in the corresponding six months of 1902. Ship building returns by districts for the six months ended Dec. 31, 1903, are shown in the following table:

	WOOD.				STEEL.				TOTAL.	
	SAIL		STEAM.		SAIL.		STEAM.			
	No.	Gross tons.	No.	Gross tons.	No.	Gross tons.	No.	Gross tons.	No.	Gross tons.
Atlantic and gulf.	187	20,838	140	7,530	2	6,956	20	36,077	349	71,401
Porto Rico	4	69	....	.....	....	.....	....	.....	4	69
Pacific	12	2 081	55	6,787	....	.....	2	753	69	9,621
Hawaii	....	.....	....	.....	....	.....	....	.....	....	.....
Great Lakes	3	36	33	755	....	.....	28	89,562	64	90,353
Western rivers	....	.....	85	5,623	....	.....	....	.....	85	5,623
Total	206	23.024	313	20 695	2	6.956	50	126,392	571	177,067

In the month of December, 1903, sixty-two vessels of 23,358 gross tons were built and officially numbered in the United States.

Annual Meeting of Lake Carriers.

Detroit, Jan. 15.—Spiritless indeed, and certainly far less interesting than any meeting that the association has yet held, was the annual meeting of the Lake Carriers' association, which opened in the Cadillac hotel on Thursday of this week. The business of the association has been so thoroughly concentrated into the hands of a board of directors, and through the board into an executive committee, that the meeting of the stockholders is more or less a prefunctory affair. It is not to be supposed, however, that the association is less important since it became an incorporated body. In point of fact it is more important and it is likely to grow in power. Summarizing briefly the outcome of the meeting it may be noted first that Mr. H. Coulby, now in charge of the lake vessels of the Steel Corporation, seems to be fully as much interested in affairs of the association as he has been in the past. The board of directors and executive committee will be made up about as they were last year. Nothing whatever was done with the labor organizations. Some of the representatives of labor were at the meeting but were simply courteously received and it was fully understood that all matters of a labor kind were left to the executives, to act when they saw fit. A report from Port Huron that Capt. Charles Maytham of Buffalo had been re-elected by the great lakes district advisory board of the Masters & Pilots' association to the position of district captain was circulated at the meeting but none of the representatives of that body were heard from in any way. Messrs. J. C. Gilchrist, James Davidson and G. A. Tomlinson, who represent large vessel interests that are not in the association, were at the hotel during the meeting, and it is probable, though not at all certain, that their vessels will be enrolled during the coming year. Mr. Livingstone of Detroit was re-elected president, J. H. Sheadle vice-president and Harvey D. Goulder counsel by the directors, but the election of secretary and treasurer was left to the executive committee with the understandng that the offices might be combined if deemed advisable. With the additional note that all owners of vessels were urged to avoid as long as possible obligations for the carrying of grain, the story of the meeting is told. Ore or coal contracts were not referred to, as there is little fear of negotiations on that score for some time to come.

The annual meeting of the association was preceded by a meeting of the executive committee on Wednesday in which the business to be considered was reviewed. A special point considered by the executive committee was the proper course to be pursued toward new tonnage, and especially towards tonnage which last year declined to be enrolled. The Gilchrist, Davidson and Tomlinson fleets were not in last year. Davidson, in particular, had not been in for several years. It was not held to be fair that the owners of these fleets should now be given stock and an interest in a balance of about $22,000 in the treasury without sharing some of the expense which the other stockholders have already borne. To this end various assessments were suggested and the matter discussed at great length. Messrs. Livingstone and Goulder were finally appointed a committee to take the question in hand and receive applications for enrollment from outstanding fleets. Nothing was accomplished up to the close of the meeting but there is more reason now than at any time during the past year to look for enrollment of the three fleets referred to.

It was presaged some time ago that no action would be taken on the labor question. The action of Mr. H. Coulby, the new president and general manager of the Pittsburg Steamship Co., in paying off his men to March 1 and offering no assurance of future employment, could have no other meaning than this. The association did not discuss the labor problem at all and made no arrangements whatever for the season's work. Industrial conditions have widely changed during the past year. There has been a general let-up in consumption and the last statement of the United States Steel Corporation, which is a heavy consumer of ore, will show how greatly earnings have fallen off. No one, therefore, looks forward to a strenuous season, and at a time so fraught with misgivings for the continuation of business there was no inclination whatever to arrange a wage schedule. Not that there was any dissatisfaction with the way in which things were done by the executive committee last year which arranged the scale of wages for all vessels enrolled in the association and which bound those, in fact, that were not enrolled; but rather that no one felt like taking a leap in the dark. It is likely, however, that when the new agreements are taken up in the spring there will be some discrimination exercised between the larger and smaller class of vessels. Last year all paid a common scale and this went hard with some of the little ones.

Owing to the fact that the board of directors met on Thursday morning it was 2 o'clock in the afternoon before the annual meeting of stockholders was held. Contrary to the usual custom the meeting was not an open one. It was called to order by President William Livingstone. The first item of business was the reading of Secretary Brown's report, detailing the general business of the past year. This report will be found on page 20.

The treasurer's report showed total receipts of $63,064.63 and disbursements of $45,219.07, leaving a balance in the treasury of $17,845.56; to which might be added for a start in the coming year some $3,000 or more income on account of grain shoveling not included in the past year's report. The principal items among the receipts were tonnage dues amounting to $42,626.06, a balance from last year of $6,311.96, and appropriations of $8,000 from the government for private lights. The disbursements were briefly: Salaries of officers, $10,300.00; of shipping commissioners, $7,321.33; of president's office, $1,227.62; of secretary's office, $36.87; of treasurer's office, $215.96; of executive committee's office, $785.96; of shipping offices, $1,639.22; aids to navigation, $11,354.71; labor troubles, $3,331.48; expense on account of annual meeting, $73.52; on account of reorganization, $981.88; on account of executive committee meetings, $3,619.92; miscellaneous expense, $4,330.60; total, $45,219.07.

DIRECTORS, EXECUTIVE COMMITTEE AND OFFICERS.

After the reading of the treasurer's report Messrs. E. T. Evans, Edward Smith and H. A. Hawgood were appointed a committee to nominate the board of directors. This the committee did with exceeding dispatch and placed in nomination the following board of directors, which was unanimously elected: A. B. Wolvin, Duluth; W. C. McMillan, Detroit; James Corrigan, H. Coulby, J. H. Sheadle, H. A. Hawgood, John Mitchell, T. F. Newman, J. E. Upson, H. D. Goulder, Cleveland; F. J. Firth, Philadelphia; C. A. Eddy, Bay City; C. W. Elphicke, Dennis Sullivan, Chicago; Frank W. Smith, Milwaukee; T. T. Morford, E. T. Evans, G. L. Douglas, Buffalo; D. G. Kerr, Pittsburg; William Livingstone, Detroit. The only change in this board from the board of last year is that Frank W. Smith of Milwaukee succeeds David Vance of Milwaukee and G. L. Douglas of Buffalo succeeds George P. McKay of Cleveland. The board of directors were authorized to increase the number of members of the executive committee from five to seven if, in their discretion, they see fit to do so. The purpose of this, of course, is to give representation upon the committee to the new tonnage which may be enrolled, some of it being sufficiently important to be entitled to individual representation.

While there was, as already stated, general satisfaction with the manner in which the executive committee had handled its affairs last year, Capt. John Mitchell stated that it was altogether too early to discuss the general business of the season of 1904 or to consider the wage schedule for the season. There was very general agreement upon this score, as the line-up of business is not very promising from the present outlook and there are undoubted advantages in a short season when the volume of work to be done is, to all appearances, limited. Mr. G. L. Douglas admitted this contention in so far as it applied to the general freight trade, that is the bulk freight trade, but he believed that neither the association nor its executive committee should take any action concerning the opening of navigation which would be likely to embarrass the package freight lines. He said that the package freight lines, which are adjuncts of the railways, desire to start their vessels running as soon as the weather permits. He had no quarrel with the manner in which affairs were managed last year; the package freight lines paid the wage schedule without protest and were heartily in accord with the aims and objects of the association; but he believed that the differentiation which exists between package work and bulk work should be recognized by the association and that no embarrassment might be put upon them when the exigencies of their business demanded that their vessels should be operated. Mr. A. A. Parker, speaking on behalf of the passenger lines, said that the passenger lines desired to stay in the association and that there was nothing whatever in the talk of their withdrawing. He suggested, however, that in future the passenger lines be permitted to arrange their own wage schedules and not be governed by the general schedule applying to the freight carriers as was the case last year. He believed a horizontal wage schedule worked an injury to some of the passenger lines and especially cited some small boats in minor excursion trades which were required to carry a complement of men beyond their needs and to pay them the same rate of wages as boats of far greater earning capacity. He, therefore, hoped the association would recognize that the difference between passenger and freight trades of the lakes are very wide and that a common schedule, therefore, works an injustice.

In this connection Mr. J. H. Sheadle made a valuable suggestion. He thought that the various passenger lines might write letters to the executive committee, stating their arguments and detailing precisely their views. It was also suggested that a subcommittee might be appointed by the executive committee to deal exclusively with the passenger lines. At any rate a disposition was manifested to amicably arrange the matter.

A communication was received from D. J. Keefe, president of the International Longshoremen, Marine & Transport Workers' association, expressing the satisfaction of the laboring element with the manner in which the various problems had been handled on the lakes last year.

Very extraordinary, indeed, was the action of the association in adopting a resolution, presented by Mr. T. T. Morford, requesting congress to locate the proposed naval training station at Buffalo. This was opposed by Mr. E. T. Evans of Buffalo, as it is well known that the site for this station has already been selected on Lake Michigan in one of the suburban districts contiguous to Chicago. Those who opposed it held that it was

scarcely the province of the association to interfere in such a matter, but nevertheless the resolution was adopted.

There was no other candidate for president than William Livingstone, the present incumbent of that office. When the new board of directors met Mr. Livingstone was re-elected president; Mr. J. H. Sheadle vice-president and Mr. Harvey D. Goulder counsel. As already noted, no action was taken upon the offices of secretary and treasurer. The old executive committee was re-elected as follows: A. B. Wolvin, H. Coulby, E. T. Evans, Edward Smith and H. A. Hawgood. This committee may be increased by two—probably Mr. J. C. Gilchrist, if he comes in, and a representative of the passenger lines.

Very little business was done by the association at Friday's session, and practically all the members had left for home by the early part of the afternoon. President Keefe, of the International Longshoremen, Marine & Transport Workers' association, addressed the members on the contract system of handling grain at Chicago, which he believed ought to be abolished. The subject was referred to the executive committee for consideration. Mr. Keefe expressed the satisfaction of all parties concerned with the manner in which affairs were handled last season. President Joyce, on behalf of the Grain Scoopers' union at Buffalo, also spoke of the satisfaction of labor over the way in which it had been treated.

While no action was taken upon the assessment rate for the present year, there was considerable discussion upon it. It was especially pointed out that last year's rate of 5 cents was severe on the small wooden vessels. This is Mr. Gilchrist's contention. He does not want to pay a local assessment and then be subject to have his small wooden tonnage taxed 5 cents this year. It may be that there will be some modification upon this score. It is one of the subjects which the executive committee will take up early.

LIST OF MEMBERS AND OTHERS IN ATTENDANCE

Cleveland—Harry Coulby, J. H. Sheadle, Henry Hawgood, Arthur Hawgood, Harvey D. Goulder, Frank S. Masten, J. C. Gilchrist, Joseph A. Gilchrist, Albert J. Gilchrist, C. P. Gilchrist, H. A. Kelley, G. W. Cottrell, C. O. Jenkins, F. W. Jackson, Henry Steinbrenner, Chas. L. Hutchinson, W. H. McGean, Wm. Gerlach, Geo. P. McKay, John Donaldson, W. H. Donaldson, N. J. Boylan, Capt. John Mitchell, John F. Wedow, Oliver W. Upson, J. W. Current, C. C. Canfield, James Corrigan, A. L. Rumsey, Capt. Edward Morton, J. H. Jenks, L. P. Smith, John T. Kelley, W. E. Chapman, Geo. Randerson, Capt. C. L. Ennes, John F. Manuel, M. Mulholland, J. W. Farley, Capt. F. A. Fick, W. R. Bartlett, C. H. Sinclair, Frank G. Seither, W. H. Teare, C. H. Prescott, J. N. Hahn, C. A. Krauss, Jr., Mark Hanlon, R. M. Lee, Alex. Hynd, E. P. Lenehan.

Chicago—C. W. Elphicke, D. Sullivan, Arthur Sullivan, Thomas J. Prindiville, Scott Dow, Homer J. Carr, A. C. Helm, H. A. Foss, R. J. Dunham, E. J. Fleming, O. G. Orr, Wm. A. Prine, Edward Hines, Capt. Walter Hamilton, J. A. Calbick, J. G. Keith, Charles Wallace, W. W. Watterson, C. A. West.

Buffalo—Edward Smith, E. T. Evans, J. C. Evans, J. J. H. Brown, Harvey L. Brown, J. B. Hall, L. P. Goodale, M. M. Drake, T. T. Morford, E. T. Douglass, W. J. Douglass, J. T. Keith, T. G. Rodgers, Frank Perew, W. A. Maytham, Junius S. Smith, John J. Boland, T. W. Kennedy, John J. Manion, John J. Joyce.

Detroit—Wm. Livingstone, C. B. Calder, Frank E. Kirby, A. A. Parker, Waldo Avery, Richard Cusen, L. C. Waldo, Robert Gray, J. W. Westcott, Henry Wineman, Jr., Timothy Hurley, John Walsh, W. S. Duncan, Antonio C. Pessano, John A. Russell, Henry A. Penton, Walter Campbell, M. W. Humphrey, Capt. Enos J. Burke, Capt. R. W. England, Byron Whitaker, C. W. Kotcher, Capt. John C. Ivers, Capt. A. J. McKay, C. A. Chamberlain, C. W. Nestor, H. L. Wilton, John O'Teagan, Joseph King.

Milwaukee—H. J. Pauley, Capt. A. B. Davis, F. W. Smith, Samuel Neff, Sidney Neff, John Wanwig, Capt. Henry Leisk.

Duluth—Alex McDougall, G. A. Tomlinson, D. T. Helm, Alex R. Sinclair, C. H. Weeks.

From several other ports—H. E. Runnels, A. M. Carpenter, Henry McMorran, Port Huron; Thomas Cheney, Ashtabula; L. S. Sullivan, John Craig, A. W. Colton, W. S. Brainard, J. P. Nagle, Toledo; John Mullen, Henry Duff, Charles Hackett, Harry Hackett, Amherstburg; James Davidson, O. W. Blodgett, W. H. Sharp, Wm. E. Pierce, Bay City; Charles T. Little, John Lozen, Mt. Clemens; A. W. Comstock, Alpena; A. Hinkelman, Henry Lester, Marine City; A. M. Smith, Algonac; Capt. John C. Garey, Capt. James Madigan, Capt. W. E. Doneley, Geo. W. Ryan, Saginaw; G. W. Parker, W. H. Scott, J. A. Ward, Wm. Smith, Marine City; W. L. Martin, Cheyboygan; W. E. Rice, Harbor Beach; H. G. Kendall, Marysville; Geo. Maul, Port Clinton; Chas. Beyschlag, St. Clair; H. H. Lockwood, E. E. Koch, Sandusky; W. J. Lynn, Wm. Lynn. George Lynn, Port Huron; J. C. Siegel, Erie; Daniel Lynn of National Lead Co., New York.

THE LUMBER CARRIERS' ASSOCIATION.

Detroit, Jan. 15.—The meeting of the Lumber Carriers' association, held here on Tuesday and Wednesday, just preceding the Lake Carriers' meeting, was in its deliberations in all respects similar to the meeting of the larger body. A board of managers was to be elected and to this board was to be entrusted practically the entire management of affairs of the association for the coming year. But before electing the board there was the usual discussion in general meetings as to the outlook for the year, and this, summed up in a few words was altogether in favor of retrenchment in operating costs with emphasis on the suggestion to the board of managers that no obligations with labor organizations or with others with whom the association has business dealings be undertaken until spring.

A committee was appointed to co-operate as far as possible with the executive committee of the Lake Carriers' association on labor matters, and it was arranged before adjournment that conferences as to agreements with labor, as well as other matters of mutual interest, will be arranged. Strangely enough, Capt. James Davidson, who has not been a member of the Lake Carriers' association for five years past, but who has some lumber tonnage and who recently joined the Lumber Carriers, is a member of the committee from the latter body that is to confer with the Lake Carriers as to labor agreements. The feeling among the owners of lumber vessels as to what their executive officers should do in view of the present outlook is shown in the following recommendations, which were generally signed by the members and presented to the board of managers:

"To the Board of Managers, Lumber Carriers' association: Gentlemen—Considering past experience and the results obtained in operating our boats for the season of 1903 and the probable conditions that face us on entering the season of 1904, and that which shall continue during the year, we feel warranted in offering the following suggestions and recommendations to our committee:

"First—In entering into any contract pertaining to the loading and unloading of our boats we should give the longshoremen preference in the hiring of help and in starting the unloading of our boats, but we should reserve the right, in case the longshoremen do not furnish the necessary men promptly, to hire whomsoever we deem best suited to our interests. Any help hired should be kept at work until the loading is completed or as long as required if they are satisfactory to our representative—the captain in charge.

"Second—To operate our boats with a very small margin of profit on our investment, a reduction in the expenses must be obtained the coming season.

"Third—An especial feature of our recommendations is that the so-called overtime or extra time of the crew as it now exists should be absolutely abolished.

"Fourth—Unless, in the judgment of the captain, it is necessary to increase the number of men on a boat over and above that prescribed by the government regulations it should not be done.

"Fifth—The injustice of the so-called five-day limit is so apparent that it should be absolutely abolished.

"Sixth—In view of the lower earning power of the small boats a smaller scale of wages and other conditions should be arranged so as to place them in a position to earn a reasonable return on their values.

"Seventh—After offering the above recommendations to your body, we, the undersigned, agree to uphold such action as you, the board of managers, elected by the Lumber Carriers' association at this meeting in Detroit, this thirteenth day of January, 1904, may take in regard to the general wage scale and conditions for the starting out of the season of 1904."

OFFICERS AMONG LUMBER CARRIERS.

The annual election of officers and selection of committees resulted as follows: F. W. Gilchrist, Alpena, president; Henry McMorran, Port Huron, first vice-president; W. H. Teare, Cleveland, second vice-president; J. A. Calbick, Chicago, third vice-president; H. E. Runnels, Port Huron, secretary and treasurer.

The board of managers—F. W. Gilchrist, Henry McMorran, W. H. Teare, J. O. Nessen, H. E. Runnels, Edward Hines, O. W. Blodgett, C. E. Rowland, J. A. Calbick, C. H. Prescott, Jr., C. H. Weeks, R. C. Brittain, A. R. Sinclair, John J. Boland, E. L. Fisher, J. W. Robinson, L. S. Sullivan, W. L. Martin, A. W. Comstock, W. H. Sharp, H. L. Wilton, V. F. Mashek, Charles Forster, C. W. Kotcher, H. H. Lockwood, C. T. Williams, W. D. Hamilton, J. E. Embree, J. C. Pringle, S. Neff, W. E. Rice, John Stevenson.

Committee on unloading—H. H. Lockwood, J. A. Calbick, C. W. Kotcher, Edward Hines, H. L. Wilton, Henry McMorran, C. T. Williams, Charles Forster, V. T. Mashek, J. W. Robinson, George Nester, W. H. Sharp, J. J. Boland, W. D. Hamilton, O. W. Blodgett, S. Neff, W. H. Teare, C. E. Rowland, C. H. Prescott, Jr., L. S. Sullivan, E. L. Fisher.

Committee on towing—W. D. Hamilton, J. A. Calbick, E. L. Fisher.

Committee on employment of union labor—W. H. Teare, C. W. Kotcher, J. O. Nessen, C. H. Prescott, Jr., W. D. Hamilton, O. W. Blodgett, J. A. Calbick, A. W. Comstock, J. C. Pringle, R. C. Brittain, W. E. Rice, John Stevenson and S. Neff.

Finance committee—Edward Hines, E. L. Fisher, J. A. Calbick, W. H. Teare, O. W. Blodgett.

Committee on legislation—Henry McMorran, A. W. Comstock, C. E. Rowland, V. F. Mashek, J. W. Robinson.

Committee on loading—Edward Hines, J. A. Calbick, Alex R. Sinclair, O. W. Blodgett, H. E. Runnels, C. H. Weeks, J. O. Nessen, L. S. Sullivan, J. J. Boland.

Hawthorne's description of a decaying custom house would, with slight changes in detail, fit Newburyport at the present time. There the United States treasury department pays $1,140 a year for the salaries of a deputy collector and a janitor to keep an office in the old granite relic, swept and habitable. In the last five years just $505 have been collected, $500 last year when four vessels from Nova Scotia loaded with coal came into the Merrimac river to relieve the local coal famine and an English ship unexpectedly landed 600 chests of tea.

LAKE CARRIERS' REPORT FOR 1903.

Affairs of the Association for the Past Year as Discussed by the Board of Directors—Tonnage of the Association, Dealings with Employes, etc.

To the Members of the Lake Carriers' Association:

The board of directors, executive committee, president and officers of the association submit herewith their annual report, as follows:

ORGANIZATION.

As stated in the annual report for 1902, the subject of reorganization and incorporation of the Lake Carriers' association was referred to a committee to present a plan at the annual meeting then to ensue. The report of the committee was presented on Jan. 22, 1903, during the annual meeting, and after hearing the report and the discussion thereon, a motion that the association be incorporated was carried by unanimous vote. The plan of incorporation as reported by the committee was adopted with some changes, and thereupon the motion was duly carried that the reorganization committee be continued until the incorporation of the Lake Carriers' association should be completed.

The articles of association for incorporation under the laws of the state of West Virginia, which had been prepared by your counsel and approved by your committee, were then and there subscribed by a large number of the members present, and were duly filed, and the incorporation completed. The certificate of incorporation of Lake Carriers' association was duly filed and became the charter of the association on Jan. 26, 1903.

Feb. 12, 1903, a meeting of the stockholders was held at Detroit, for the purpose of adopting by-laws and electing directors, and your board of directors was duly elected, as follows: A. B. Wolvin, W. C. McMillan, James Corrigan, H. Coulby, Frank J. Firth, J. H. Sheadle, Charles A. Eddy, C. W. Elphicke, Dennis Sullivan, David Vance, Edward Smith, T. T. Morford, D. G. Kerr, W. W. Smith, H. A. Hawgood, John Mitchell, T. F. Newman, George P. McKay, William Livingstone, J. E. Upson, H. D. Goulder.

At the first meeting of directors then and there held, the executive committee, as provided in the by-laws of the association, was chosen, as follows: A. B. Wolvin, H. Coulby, H. A. Hawgood, Edward Smith and F. J. Firth. Thereafter Mr. E. T. Evans was duly substituted in place of Mr. Firth, on account of the inability of Mr. Firth to serve at the time.

The board of directors, as provided by the by-laws, elected from their own number as president Mr. William Livingstone of Detroit, and as vice-president Mr. J. H. Sheadle of Cleveland. They also appointed Capt. Geo. P. McKay, treasurer; Harvey L. Brown, secretary, and Harvey D. Goulder, counsel.

The objects and purposes of this association as stated in the articles of association are as follows:

1. To establish and maintain shipping offices for the convenient securing of seamen for vessels on the great lakes, their connecting and tributary waters.

2. To establish, maintain and procure the establishment and maintenance of aids to navigation; and improve and secure the improvement of channels, docks, wharves, loading and unloading and terminal facilities.

3. To establish and maintain, by contract or otherwise, such amicable relations between employers and employed as will avoid the public injury that would result from lockouts or strikes in the lake-carrying service.

4. To provide for the prompt and amicable adjustment of matters affecting shipping and the interests of vessel owners on the great lakes and their connecting and tributary waters.

In a very general way the extent to which your committees and officers have been able to carry out the purposes of the association are briefly set forth under the respective headings as follows:

OPERATIONS OF THE SHIPPING OFFICES.

During the past season shipping offices were maintained as during the preceding season, excepting that the Chicago and South Chicago offices were combined and the Milwaukee office was discontinued. The report of the chief shipping commissioner shows the number of men shipped through the respective offices as follows:

	Cleveland.	Ashtabula.	Conneaut.	Buffalo.	Toledo.	Chicago and S. Chicago.
Mates	32	21	16	10	4	23
Wheelmen	97	42	32	24	12	59
Watchmen	86	56	41	37	17	67
Firemen	73	18	19	16	8	36
Ordinary seamen	1372	1092	1298	974	186	1245
Cooks	61	30	25	18	3	27
Seamen	98	59	43	59	24	84
Oilers	23	12	18	27	9	27
	1842	1330	1492	1165	263	1568

The Cleveland office also sent to other ports 233 men, making a total for all offices of 7,893 men. Of men sent to other ports from Cleveland office nine went to Ashtabula, sixteen to Conneaut, 104 to Fairport, sixty-four to Lorain, eighteen to Huron, fourteen to Sandusky and eight to Toledo.

The treasurer's report will show the expense of carrying on this branch of the business of the association.

The system of carrying on the shipment of seamen differed somewhat from the methods in use heretofore, in that offices were maintained by the Lake Seamen's union at the ports where the Lake Carriers' association maintained its shipping offices, and it was provided in the contract with the Lake Seamen's union that requisitions for men to be furnished should be made by the officers of the vessels to the shipping commissioner of the Lake Carriers' association or his assistants, at the port nearest to which said vessel might be lying, and such shipping commissioner in turn was to make requisition on the shipping offices of the Lake Seamen's union for all such men, saving the right to the commissioner of the Lake Carriers' association to furnish other men in case the union was unable to furnish them promptly, and also saving to the officers of the vessel the right to ship union men who might apply to them for jobs, as heretofore.

GRAIN SHOVELING AT BUFFALO.

The system which has worked so well during the several years past was continued during the season of 1903, under the supervision of the Buffalo members of your executive committee, Mr. E. T. Evans and Mr. Edward Smith, with Thomas W. Kennedy, the superintendent, in charge. His report to such sub-committee is printed in detail and will be distributed at the annual meeting, to which report reference may be had for full details of quantities of grain handled, number of men employed and expense and profit of the undertaking.

The agreement made with the Grain Shovelers' Union, Local 109, for the terms and conditions of labor for the season, was substantially a renewal of the contract of 1902, at a slightly increased rate. Your committee did not make any contract, however, concerning the use of the steam shovels, as in prior years.

PRIVATE LIGHTING IN 1903.

The contract with the lighthouse board for maintenance of private lights in lower Detroit river continued for the fiscal year ending June 30, 1903, and the Lake Carriers' association received from the United States the amount due for balance of year to June 30—$2,000. An appropriation of $4,000 having been made by congress to the lighthouse board for the purpose of maintaining said lights by private contract, your president and secretary filed proposals to renew the contract to maintain the lights from July 1, 1903, to June 30, 1904, for the sum of $4,000. Contract at that rate was awarded to this association, and the treasurer's report will show that on Dec. 31, 1903, the semi-annual installment of $2,000 for the first half year of performance of the contract was paid by the United States. The contract will continue until June 30, 1904, when the further installment of $2,000 will become due. Doubtless the like appropriation will be made at this session of congress, in order that the system may be continued.

The appropriation to the lighthouse board also included $4,000 for the purpose of maintaining lightship on Southeast shoal by private contract for the year beginning July 1, 1903, and ending June 30, 1904. Your officers also secured contract for maintaining the lightship Kewaunee at that point, for the sum of $4,000, payable in two installments, and $2,000 was paid Dec. 31 for the first half year under such contract. The association will therefore be required to maintain the lightship at Southeast shoal until June 30, 1904, when the further sum of $2,000 will be paid.

There will doubtless be appropriations for both of these plans of private lighting in the appropriations bill when passed by the present congress.

The range lights and float lights at Amherstburg were lighted March 31, 1903, and the range lights were maintained until Dec. 13. The float lights were discontinued Nov. 27 on account of running ice. The lightship Kewaunee took her station on Southeast shoal April 1, and remained there until Dec. 10.

It is recommended for your consideration that the association endeavor to have the lighthouse board establish and build stone cribs on the west side of Lime-Kiln crossing where the north and south lightships will be located next summer, for maintaining of lights in place of present lightships; the lights being located on permanent cribs, would not be affected by ice or other conditions, so that they could be continued without difficulty or interference until the close of navigation. This could be done at a very moderate expense, and be cheaper for the government than the maintenance of the present two lightships now in use for that purpose, and be very largely advantageous to us.

WORK IN PROGRESS.

Congress in 1902 appropriated $4,000,000 for the St. Mary's river for work in Middle rapids, Nine-Mile point to Hay lake, W. Neebish rock cut, and dredging in lower Hay lake and upper Mud lake, and at both ends of W. Neebish cut, for a 21-ft. channel.

Congress also in 1902 appropriated $1,750,000 for the purpose of making a 21-ft. channel, 600 ft. wide, from above the present Lime-Kiln crossing through to Bar point, Lake Erie.

This work is now being advertised and bids for the Detroit river and the St. Mary's river will be opened the last of February, and the contracts will be let under the continuous contract system. Enough money is now on hand for first year's work, and subsequent years' work will be appropriated under the Sundry Civil act as fast as contractors are able to show they are ready for it.

GLIDDEN WRECK.

Oct. 9 the steamer John N. Glidden was sunk in collision in St. Clair Flats canal near the lower end on west side, for a time

entirely obstructing navigation, causing delays and large expense for weeks thereafter. This accident illustrates most forcibly the great danger that is liable to happen at this point as long as we have to depend on the present canal, and demonstrates the great importance and necessity of hastening the construction of the new canal on the west side of the present canal, in order to relieve and prevent the possibility of any entire obstruction to the navigation of the great lakes. Major W. H. Bixby, United States engineer, has specifications now in the hands of the printer and expects to be able to advertise this work and be ready to open bids and let contract for doing the work about the middle of March.

The entire appropriation for doing this work is now on hand and available.

AIDS TO NAVIGATION.

As the lighthouse inspectors for the several lake districts cannot well care for more lights with the tenders now available, it was difficult to persuade the lighthouse board to report favorably on additional aids to navigation until such time as they should have secured tenders to care for further aids to navigation, so that we are not able to report as extensive a list as usual of additional aids to navigation secured during the past year. We are able, however, to report the following:

Two gas buoys covering new shoal off Waugoshance light, Straits of Mackinaw; fog whistle Raspberry island, Lake Superior; appropriation for lighthouse and fog signal Middle island, Lake Huron, to be built next season; appropriation of $54,000 for repairs to Spectacle reef lighthouse crib, Lake Huron; Racine light and fog whistle, Lake Michigan, new tender for eleventh lighthouse district at cost of $75,000.

CANADIAN AIDS TO NAVIGATION.

One set of ranges and lights established at Point au Pins, St. Mary's river; one set of ranges and lights Point Edward, foot of Lake Huron.

INTERNATIONAL COMMISSION ON LAKE LEVELS.

Pursuant to the provisions of the last river and harbor bill, to which your attention was called last year, the president of the United States has appointed the three members who are to represent the United States on the commission. The bill provided that the president in selecting the "three members of said commission who shall represent the United States is authorized to appoint one officer of the corps of engineers of the United States army, one civil engineer well versed in the hydraulics of the great lakes, and one lawyer of experience in questions of international and riparian law." The president has accordingly announced the appointment of Col. O. H. Ernst, at present United States engineer in charge of the harbors at Chicago and Calumet; Prof. Gardner S. Williams of Cornell University, a distinguished civil engineer, and our well-known and distinguished admiralty lawyer, Mr. George Clinton of Buffalo.

The Canadian commissioners have not yet been appointed. The reason for the delay in appointment of the representatives of the Dominion of Canada is doubtless that the negotiations must be conducted through the British foreign office at London.

RELATIONS BETWEEN EMPLOYERS AND EMPLOYED.

As is well known, one of the principal objects of reorganizing the association was to have the greater ability and facilities in dealing with the questions inseparable from the employment of so many men in so many different capacities as we are required to employ on our vessels.

After mature consideration an executive committee of five men was selected with reference to their experience in such matters, and their ability alsc to attend meetings, as it was seen that under the new conditions pressing upon the association, much time would be required in formulating policies and then making working arrangements with the men if they were found feasible.

We are happy to say that the members of the executive committee gave very freely of their time, and the business demanded as close and careful attention as the members are in the habit of giving to their own private business affairs.

It was concluded that for the season of 1903, which was almost upon us when the organization was completed, it would be desirable to enter into working contracts with the men through their various organizations, and the committee entered into contracts with the Lake Seamen's Union, the International Longshoremen Marine & Transport Workers' association, the Marine Cooks & Stewards' Union, and the Marine Firemen, Oilers & Water Tenders' Union. These several agreements were printed in a pamphlet and furnished to members of the association.

This action was taken with much care, with a great deal of debate, inseparable from the novelty and importance of the questions; the working arrangements were made, the executive committee giving the most painstaking thought to each contract and obtaining the best and fairest terms of which the situation seemed to admit at the time. There was more or less friction at the outset. Especially there was trouble in reaching a satisfactory arrangement with one organization, but through patient effort this was accomplished. After these arrangements had been carried on for some time, many cases of friction disappeared, owing to the growing confidence on each side in the spirit manifested on both sides to fairly carry out the arrangement.

We have had the experience of one season. The conditions before us are essentially different from what they were last spring. We have no doubt of the complete ability of the executive committee which will be chosen to handle the subject in an adequate and capable manner with such changes of policy or modifications of agreement as the experience of the past year and the conditions which we shall have to face may require or suggest.

MEMBERSHIP AND TONNAGE.

The total number of vessels enrolled in the association for 1903 was 543, and their net tonnage amounted to 890,532. The different ports represented in number of boats and tonnage are as follows:

	Net tonnage.	Number of Vessels.
Bay City	11,573	5
Buffalo	99,992	54
Cleveland	311,475	157*
Chicago	36,899	22
Detroit	54,455	36
Duluth	308,952	118
Erie	3,191	2
Michigan City	1,218	1
Milwaukee	23,285	17
North Tonawanda	11,752	13
Ottawa	8,452	4
Port Huron	3,033	2
Sault Ste. Marie	8,406	6
Toledo	7,849	6
	890,532	443
		100 tugs
		543

*Also 100 tugs.

FINANCES OF THE ASSOCIATION.

The annual report of the treasurer is submitted herewith, showing the receipts and disbursements in detail, in the several branches of the business of the association. [Treasurer's report is summarized on page 18.]

Respectfully submitted this 8th day of January, 1904.

WILLIAM LIVINGSTONE,
President.

CANADIAN SHIPPING NOTES.

Thomas Fraser, an old time ship builder at New Glasgow, N. S., died there recently.

The Richelieu & Ontario Navigation Co. has prepared plans for a marine railway at its docks at Sorel, Que.

C. Jones, Collingwood, Ont., is having built by Abbey Bros., Owen Sound, a 50-ft. wooden tug, to be completed in April.

R. H. Cushing, director of public works, St. John, N. B., will receive tenders to Feb. 15, for a steel screw ferry boat for the St. John city council.

The Thousand Island Steamboat Co. is reported to have purchased a 17-knot steamer at New York to replace the burned steamer Empire City.

The Imperial Dry Dock Co. of St. John, S. A. Corbett, St. John, secretary, is asking for tenders for the construction of a dry dock and other works by Feb. 3.

The Dominion government has approved of the plans for two-story steel sheds at the wharves at Montreal to cost $2,500,000, and tenders will be asked for the work immediately.

Capt. W. A. Clark of Collingwood, Ont., has sold his tugs Beatrice M. and Orcadia to J. Bordman of Rossport. The tugs will be removed from Lake Huron to Lake Superior.

The steamer Senlac for the St. John (N. B.) and south shore of Nova Scotia route was launched, fully completed, at St. John recently and will be ready to go on her route this week.

P. P. Young, Lindsay, Ont., has placed a contract with the Bertram Engine Works, Toronto, for the construction of a steamer 96 ft. in length for the Kawartha lakes excursion trade.

The Dominion Marine association is promoting a movement looking to the free navigation of the Canadian canals on Sunday, and the Dominion Lord's Day Observance Society is protesting.

The Canadian steamer Riverside, operated between Kingston, Ont., and Ogdensburg, N. Y., is to be lengthened 20 ft., during the winter and equipped with new machinery. Capt. Dana is having the work done at Kingston.

The Cape Breton Steamship Co., Ltd., has been incorporated under the Dominion companies' act to acquire the steamer Baines-Hawkins, or other steamers, and to carry on a general navigation business. The capital is fixed at $40,000 and the company's offices are to be at Sydney, N. S. R. Harrington, Sydney, and D. Rudderham, North Sydney, are among those interested.

The question of increasing the dock and wharf accommodation at St. John, N. B., appears to be in a hopeless muddle. The Canadian Pacific wants more accommodation for its steamers, and the Allan Line has already taken three of its steamers hitherto running to St. John off the route and made Halifax their terminal. The city council does not want to do the work, and wants the Province or the Dominion to undertake it.

Rear Admiral Taylor, chief of the bureau of navigation, appeared before the house naval committee last week to urge the establishment of a naval training station on the great lakes, for which an appropriation of $250,000 is recommended by the department. Lake Bluff, on Lake Michigan near Chicago, and Racine, Wis., have been recommended as sites. The admiral in his argument said that such a station would tend to induce the enlistment of a better class of seamen from the interior and would decrease the number of desertions, as cadets would have an opportunity to test seafaring life before actual enlistment.

VISIT TO THE GREAT LAKES WORKS.

On Friday afternoon a delegation from the Lake Carriers' association and invited guests visited the plant of the Great Lakes Engineering Works, being conveyed there by a special train on the Michigan Central railway. There were about seventy-five in the party and undoubtedly there was not one who was not considerably surprised with what he saw. The works are splendidly constructed. Due regard has been taken of present requirements and future demands, for every building is capable of enlargement, notwithstanding the fact that the vital machinery is already carried in duplicate. Everything about the plant is pneumatic and electric which induces largely to system, cleanliness and smoothness of operation. In the mold loft, a spacious and well-lighted building, the visitors saw the molds of the steamer which is being built for Frank Seither of Cleveland, and which is to be named after the man who is to sail her—Capt. R. W. England. No part of the buildings was missed, not from the rivet storage room to the great machine shop with its traveling electric cranes. Every one carried away with him the impression that the utmost thought had been put into the arrangement, construction and equipment of the buildings and that no point had been overlooked which might contribute to the economical building of ships. The visitors were taken through the buildings by the officers of the company and every detail explained to them. Lunch was served on the train.

BATTERED BOTTOM OF THE HUTCHINSON.

Buffalo, Jan. 14.—Marine men are taking a day off just now to look at the steamer J. T. Hutchinson, which has had a history from Nov. 29, when she left Duluth with a cargo of flaxseed, till last Saturday, Jan. 9, when she went into dry dock here, that has not yet been equalled on the lakes in many respects and possibly not anywhere else. A great part of this history has been written up from day to day in a fragmentary way, but a great part of it will not be written at all unless there is litigation to bring it out.

It is at least safe to say that the vessel man who looks at the steamer as she lies in the dock now is much more astonished at her history than he could have been at any previous time. There were reports while she was on the way down that she leaked but comparatively little and that her bottom might not be very much injured as she merely balanced on the rock off Keweenaw point with deep water almost all about her. There will not be any more such views of the case. Those who are best acquainted with navigation are saying now that her bottom is a sight to go a long way to see and some of them go far enough to add that had all the facts been known it would have been very hard to get a crew to come down on her. In all the experience of lake freighters with heavy bottom damages there has been nothing so bad as the bottom of the Hutchinson.

She appears to have struck the rock pretty well forward and on the starboard side of her bottom. Then for a considerable distance she is not injured, but well aft begins the crushing contact that crumpled the bottom up as though it were a blanket flapping in the wind, or a tin pan the boys have kicked about the street. All this is on her starboard side and does not extend quite up to the keel. The plates are good stuff and are practically all there, but the frames have given way to the number of 130 to 140, according to present estimate, so that the bottom is a sieve. This condition of things is estimated to be 120 ft. long. For a distance of about 80 ft. amidships everything is pushed up about 5 ft. so that there is no difficulty in standing or walking erect under the steamer while viewing her battered bottom.

The breach does not show up on the steamer's side except where the plates are crumpled up, mostly on the stretch of 120 ft. or so, and then only at the turn of her bilge, where the plates give one the notion that they must have been hot and the steamer had sat down on great round masses of solid matter.

The top of the water bottom inside shows the actual strain the vessel stood on the way down. It is bulged up for a distance of about 50 ft., in some places as much as 18 in. Had this strain been too great the tank top, as it is called, would have given way in some form and it might have split across and opened up wide enough to have sent her to the bottom like a shot, unless the waxy condition of her cargo had held the water back for a short time. It was a wonderful voyage that was made down the lakes—wonderful without the added peril of storm and ice fields to encounter.

A couple of months, steady work, will certainly be required to rebuild the steamer. Of course everybody is asking how much it will cost to do the work. Those who will have the bills to pay are not saying much, except to remark that $50,000 will do a lot of work these days. One of the representatives of the ship building combination is quoted as saying that the job will cost $110,000 to $115,000. Then there is the great cost of getting the steamer to Buffalo. The bill of the Great Lakes Towing Co. is said to be $22,000, and this does not include the cost of the pumps or of the two ferries that helped the steamer through the ice below Detroit, a matter of $500 a day each for two and a half days and called cheap at that. About 100,000 bushels of dry flaxseed was saved and such of the rest as was not jettisoned was sold in various-sized lots, the aggregate price not yet being figured out.

As to the work to be done there is but one observation very pertinent and that is on the wonderful advances made in metal ship building since the day, only about a dozen years ago, when a very large rebuild had to be given the steamer Northern Wave. Vessel plates of that day were hard and inflexible, often breaking like glass when bent, and they could not be rolled out cold. Moreover all removal of rivets and plates had to be done by hand, a process very slow and tedious. Steel plates are now rolled cold, often straightened out when badly bent. Some say that the Hutchinson's tank top will come back to place when the obstructions are removed. We now have tools that will do this work in a fraction of the time then required. The air drill will remove the rivets and the air chisel will cut the plates and other steel so fast that it is estimated that it will take 25 per cent. less time than it would a dozen years ago to repair the steamer.

JOHN CHAMBERLIN.

SPECIAL HONOR FOR CAPT. J. J. H. BROWN.

Capt. J. J. H. Brown of Buffalo, one of the ex-presidents of the Lake Carriers' association and who has for years been among its most active members, was offered congratulations from all quarters at the Lake Carriers' meeting in Detroit upon his election on Wednesday last to the presidency of the Buffalo Chamber of Commerce. This honor is looked upon as the best within the gift of the people of Buffalo, as the membership of the Chamber of Commerce comprises more than 1,100 of the business men of the city. It was expected that the contest for the presidency would be spirited and the vote close, as there was unusual interest in the election this year, but the ticket on which Capt. Brown was elected had about two to one of the votes. Capt. Brown has lived in Buffalo for forty years and has conducted a vessel business there for twenty-five years.

OPPOSED TO GOVERNMENT DREDGES.

At their annual convention in Chicago recently the International Brotherhood of Steamshovel and Dredge Engineers and Cranesmen of America adopted resolutions asking the government to discontinue the building of dredges that are to compete under government direction with the contractors of the country who have vast sums of money invested, and appointed a committee to present the resolutions to President Roosevelt and to bring the matter to the attention of congress. This committee will also urge the passage of a bill to congress to protect organized labor in the construction of the Panama canal.

The following scale of wages was adopted for the United States and Canada: Minimum for engineers, $125 per month; cranesmen, $90 per month; for Cuba and Mexico, $160 per month and board for engineers, and $125 per month and board for cranesmen. Scale of wages for Panama canal work, $300 per month and board for engineers and $250 per month and board for cranesmen. A committee was appointed to meet the contractors of the great lakes next month to adjust the scale of wages and working agreement for the season of 1904 on the lakes.

Officers elected for the ensuing year are: President, Chas. Rees of Chicago; first vice-president, Wm. Osnor of Chicago; second vice-president, Thos. McKinney of Thorold, Ont.; third vice-president, Robert Farrell of Philadelphia; vice-president at large, John Dillander of Philadelphia; secretary and treasurer, T. J. Dolan, Jr., of Chicago.

PILOT RULES OF THE LAKES.

It was expected that the matter of trying to bring about uniformity in rules of the road for both Canadian vessels and vessels of the United States on the lakes would come up at this week's meeting of the Lake Carriers' association in Detroit, but this question will probably be left, as far as the Lake Carriers' association is concerned, to the executive officials. It is well known, of course, that since the passage of the White law by congress there is a great difference on the lakes in the rules of Canada and the United States. The Dominion Marine association proposes to make another effort through conferences and agreements with the Lake Carriers to assimilate these rules. On this score, Capt. Thomas Donnelly of Kingston, who has given a great deal of attention to the subject, says in a letter to the Review:

"During the past few days the press of Canada in publishing the notice of the proposed meeting of representatives of the Lake Carriers' association with our Dominion Marine association has stated that 'it is the intention of Canadians to adopt the United States lake navigation rules,' and during the past week I have received five inquiries from Canadian vessel masters asking if this statement is true. Would you please allow me to state that the proposed meeting is for the purpose of taking steps to assimilate the rules of navigation for use in lake navigation, and every one interested must agree that this is an important and worthy object. For fifteen years past I have endeavored by individual effort and in conjunction with others to bring this to the notice of the authorities on both sides of the line and for the first time I have hopes of success. I cannot foretell what action may be taken by the joint committee of which I have the honor to be an humble member, but no one who has studied your Pilot Rules for the Lakes and your White law would want to accept both of these imperfect measures as they now stand."

Next season the Goodrich Line will operate three steamers between Chicago, Grand Haven and Muskegon, as against two in the past. Great growth in the travel to and from summer resorts is the cause of this improvement in service.

An Ashland dispatch says that the C. Reiss Coal Co. has negotiations under way for the erection next summer of a large coal dock at that point.

ENGINEERING SOCIETY LIBRARY, UNIVERSITY OF MICHIGAN

OFFICERS AMONG MARINE ENGINEERS.

Oswego lodge, No. 72: President, Freeman Axtel; vice-president, Peter Dougherty; corresponding and recording secretary, Wm. T. Finlay; financial secretary, Thomas O'Neil; treasurer, Spencil Axtel.

Grand Haven lodge, No. 76: President, James Cantwell; vice-president, Samuel Kimball; recording secretary, Eugene Scott; financial secretary, Ralph Vantall; corresponding secretary, Orson Vanderhoef; conductor, Cornelius Ball; chaplain, Robert Bloeckes; door keeper, John Van Hall; delegate, Cornelius Ball; alternate, Samuel Kimball.

Detroit lodge, No. 3: President, Geo. M. Milne; vice-president, F. W. Robinson; recording secretary, John Geminhard; corresponding secretary, A. L. Jones; financial secretary, Frank Kenyon; trustee, A. L. Jones; representatives to national convention, A. L. Jones, E. R. Blanchard, W. F. Taylor; alternate, E. J. Rae.

Ogdensburg lodge, No. 89: President, A. J. Knich; vice-president, E. R. Lord; financial secretary, A. E. Cline; treasurer, A. E. Cline; recording secretary, S. W. Cline; corresponding secretary Geo. E. William; delegate to national convention, L. O. Willix; alternate, Geo. E. Williams; trustees, L. O. Willix, Hugh Goodheart, Robert Vallance.

Sturgeon Bay lodge, No. 88: Past president, Frank Bird; president, Edward D. Weber; vice-president, Ashley Copin; recording secretary, Axtel Swan; corresponding secretary, C. O. Chapman; financial secretary, Wallace Ives; treasurer, Charles Kotterfield; delegate to convention, Daniel McLennon; conductor, Eli Elison; chaplain, Patrick Writt; door keeper, John Riley.

Chicago lodge, No. 4: President, Thos. J. Kehoe; first vice-president, Henry Christenson; second vice-president, F. Hankey; recording secretary, Wm. L. Webster; corresponding secretary, James Macauley; financial secretary, D. W. Wise; treasurer, Geo. M. Furness; representatives to Washington, Stewart H. Moore, Geo. A. Grubb; alternates, Wm. Eddy, Daniel Robinson; district deputy, W. L. Webster.

South Haven lodge, No. 102: Past president, Wm. Tyler; president, Ralph Peterson; vice-president, B. F. Devor; recording secretary, Chas. Secord; financial secretary and treasurer, Wm. Tyler; corresponding secretary, Fred W. Linsemeyer; delegate, Chas. La Bounty; alternate, G. A. Gillette.

Marine City lodge, No. 53: Past president, Marcus Hill; president, Wm. Crowley; vice-president, Wm. Fritz; recording secretary, H. W. Bell; financial secretary, E. H. Hill; treasurer and corresponding secretary, Harry Stone; door keeper, Albert Jacobi; chaplain, John McNamara; delegate to national convention, A. A. Manion; alternate, Frank Parker; trustees, Wm Brake, Chas. Burns, D. M. Foster.

Bay City lodge, No. 27: Past president, N. P. Slaters; president, E. Harner; vice-president, C. O. King; recording secretary, R. B. Fegert; corresponding secretary, L. C. Schwall; financial secretary, J. A. Braman; treasurer, J. Nold; chaplain, L. Sleno; conductor, Wm. Shera; inside door keeper, M. Walsh; outside door keeper, C. Gregory; delegate, N. P. Slaters; trustees, L Sleno, L. C. Schwall, J. B. Hart.

Green Bay lodge, No. 73: Past president, Paul Denis; president, J. Previot; vice-president, J. Enderby; financial secretary, L. Garot; recording secretary, T. Worthy; corresponding secretary, Ed. M. Donahue; treasurer, Henry Welsch; conductor, G. Worthy; chaplain, James Oliver; doorkeeper, James Denis; delegate to convention, Theo. A. Meyers.

Port Huron lodge, No. 43: Past president, Chas. Sylvester; president, Thos. Treleavin; first vice-president, Wm. Butler; second vice-president, James Oag; corresponding secretary, Thos. J. Coyle; recording secretary, James Southgate; financial secretary, Walter Thorn; treasurer, Arthur Armston; delegates to national convention, Geo. Bowen, Walter Thorn; alternates, Andrew Wilson, Arthur Armston.

Clayton lodge, No. 46: President, C. P. Sampson; vice-president, B. T. Farrell; recording secretary, E. W. Bradway; corresponding secretary, D. W. Farrell; treasurer, D. W. Farrell; financial secretary, D. W. Farrell; chaplain, A. H. Wait; conductor, Geo. Mercier; door keeper, Joseph Denney; delegate, W. M.Hemingway of Alexandria Bay.

Milwaukee lodge, No. 9: President, Wm. G. Fell; first vice-president, Joseph R. Mason; second vice-president, Arthur L. Barnes; treasurer, Edward Dixon; financial secretary, Geo. C. Risch; corresponding secretary, Wm. Bridges; recording secretary, John E. Lowgy; chaplain, Wm. McSweeney; conductor. James Daly; door keeper, Jacob Fry; delegate, Wm. G. Fell; alternate, Chas. Bendschneider.

Saugatuck lodge, No. 67: President, Wm. P. Wilson; vice-president, Henry Randall; past president, A. W. Coates; recording secretary, Wm. G. Edgcomb; corresponding secretary, financial secretary and treasurer, James R. Dale.

Erie lodge: President, Andrew Chapman; first vice-president, Fred Ackerman; second vice-president, Charles Osgood; recording and corresponding secretary, Frank Penney; financial secretary and treasurer, Edward Crossley; trustee, Charles O'Neil; delegate, Andrew Chapman; alternate, Edward Crossley.

Alpena Lodge, No. 85: Past president, William Hamilton; president, R. H. Parker; vice-president, R. Piepkone; recording secretary, S. K. Kissack; corresponding secretary, John A. Packard; financial secretary, Byron N. Persons; treasurer, H. D. Irwin; trustees, R. H. Parker, R. Piepkone and A. J. Irwin; representative, William Hamilton; alternate, Horace Carter; conductor, Charles Miller; chaplain, David Thomson; door keeper. Harry Daw.

Manistee lodge, No. 44: Past president, H. F. Otto; president, Chris. Dahl; vice-president, Geo. E. Owens; corresponding secretary, Chas. J. Sullivan; recording secretary, John Nelson; financial secretary, Wm. Martin; treasurer, Richard Winkler; delegate to national convention, W. R. Patterson; alternate, Chris. Dahl.

Cheboygan lodge, No. 55: President, J. H. Lowery; vice-president, John McLaughlin; recording secretary, Harry Roberts; corresponding secretary, Archie Stalker; financial secretary and treasurer, J. A. McDougall; representative, John McLaughlin.

Manitowoc lodge, No. 77: Past president, G. P. Roth; president, Chas. Monroe; first vice-president, Louis Buritz; second vice-president, Wm. Mackey; financial secretary, Joseph P. Brener; corresponding secretary, John P. Hall; recording secretary, Ed. Dusold; treasurer, G. P. Roth; conductor, John McCabe; chaplain, Gustave Jorsch; door keeper, Thos. Polack; trustees, John P. Jorsch, John P. Hall, Frank P. Heffernan; delegate, Chas. Monroe; alternate, John P. Jorsch.

Duluth lodge, No. 78: President, Lewis Griggs; vice-president, John Adams; second vice-president, Wm. Murphy; corresponding secretary, J. P. Burg; treasurer, Armour Harvey; conductor, Leonard Green; chaplain, James Mutch; door keeper, Richard Hoy; delegate to national convention, Lewis Griggs; alternate, Frost Burrows.

OFFICERS AMONG SHIP MASTERS.

Chicago lodge: President, Thomas M. Hough; first vice-president, John W. Isbester; second vice-president, P. C. Roach; treasurer, Wm. W. Shaw; secretary, F. B. Higgie; chaplain, C. E. Kohnert; marshal, Raymond Cazallis; warden, C. K. Moore; sentinel, Peter McCullough; delegate to grand lodge, Thomas H. Hough; alternate, Geo. H. Flood.

Marine City Lodge, No. 8: President, Capt. J. A. Ward; first vice-president, Wm. Hagan; second vice-president, R. Z. Utley; secretary, F. C. Folsom; treasurer, James Taylor; warden, Samuel McCann; marshal, F. A. Dupuie; sentinel, A. F. Broadbridge; chaplain, James Leitch.

Buffalo Lodge, No. 1: President, Charles A. Potter; first vice-president, Geo. Stevenson; second vice-president, James A. Madigan; treasurer, John B. Hall; secretary, John Perew; delegate to grand lodge, Charles A. Potter; alternate, Geo. C. Stevenson.

Port Huron lodge, No. 2: President, M. A. Budd; first vice-president, J. E. Reynolds; second vice-president, James Baby; treasurer, D. M. Sinclair; financial and recording secretary, Geo. W. Pierce; chaplain, H. Maitland; marshall, John Burns; warden, James Warwick; sentinel, F. W. Manuel; delegate to grand lodge, M. A. Budd; alternate, J. E. Reynolds.

AROUND THE GREAT LAKES.

Mr. Lawrence Weeks of Cleveland, who is well known among marine engineers of the lakes, was a few days ago offered the position of inspector of boilers in the Philippines. The salary is $1,800 a year.

The Pere Marquette ferry International, while battling with the ice in St. Clair river, became disabled this week by having her rudder broken off and carried away. The tug Sarnia went to her rescue and took her to Port Huron.

The lodge of Ship Masters at Marine City is planning for special entertainment of their friends at their fourth annual reception and ball on the evening of Thursday, Jan. 21. Practically the entire membership of the lodge is represented on the various committees in charge.

The United States court of appeals at Cincinnati has reversed the decision of District Judge Swan of Detroit in the admiralty dispute between the owners of the barge Winona and steamer Garden City. In 1899 the Winona in tow of the barge Garden City, stranded near Portage entry and the owners of the former sued to recover $9,000 damages. Judge Swan held the steamer at fault, but the circuit court has now reversed him.

An Ottawa dispatch says that the Dominion government will probably reduce or abolish altogether tolls in Canadian canals and charges at government wharves and elevators by the opening of navigation next spring, with a view to securing a still greater volume of business from American grain ports than was secured last season. The result of the reduction of canal tolls was so favorable to the St. Lawrence route last year that the Dominion officials are now confident of still greater gains the coming year by the extension of the liberal policy adopted last May.

With their usual promptness in adopting all measures of safety for passengers traveling on their Lake Michigan steamers, officials of the Goodrich Transportation Co. have decided to extend the water sprinkler system for the extinction of fire to the cabins and staterooms of their vessels. This system is so well known ashore and has been so thoroughly tried in factories, department stores, etc., that great reductions are made in rates of insurance wherever it is applied. It has been in use for some time past between decks and in the holds of Goodrich steamers.

Masters and Pilots of Detroit, harbor No. 47, have elected the following officers: Captain, James Beavais; first pilot, E. A. V. McLachlan; second pilot, William J. McLean; purser, Frank C. Pratt; captain's clerk, L. P. Anderholt; chaplain, B. S. Baker; first starboard quartermaster, A. A. Archer; second starboard quartermaster, John Welch; first port quartermaster, N. McGuire; second port quartermaster, C. W. Jarriatt; saloon watchman, Bernard J. Sloan; forward deck watchman, Samuel Moore. Capt. James Veavais and Capt. H. C. McCallum were elected delegates to the grand lodge meeting in Washington and Capt. George McCallum was elected delegate to the advisory board meeting at Port Huron.

CLYDE OUTPUT OF SHIPS.

Returns from the Various Yards for 1902 and 1903—Union of Owners of Sailing Ships—In-turning and Out-turning Screws on Twin-Screw Ships.

Glasgow, Jan. 4.—Clyde ship building returns for 1903 show a large decrease in the tonnage launched. In 1902 the output was 312 vessels of 518,270 tons, and in 1903 the total so far returned is only 260 vessels of 454,739 tons—a reduction of 63,531 tons or about a month's work. This is perhaps not so large a reduction as was anticipated by some, but most of the yards were employed during the year more in working off contracts booked during 1902, rather than on work booked in 1903. Less work has been contracted for than has been launched, and the coming year will show a still greater decrease in the tonnage launched. In many of the yards work is now very scarce and the tonnage on hand is very much less than it was a year ago. On the Clyde we have some fifty ship building yards and the following shows the vessels launched by each in 1903 and 1902:

Builders.	Vessels	1903. Tons.	1902. Tons.
John Brown & Co.	6	55,152	26,260
Russell & Co.	13	45,810	55,585
The Fairfield Co.	8	39,053	30,300
Charles Connell & Co.	7	28,908	41,052
Wm. Denny & Bro.	20	30,472	40,329
Alex. Stephen & Sons	3	23,612	27,826
Barclay, Curle & Co.	5	20,944	31,289
Scott & Co.	6	20,195	13,894
Caird & Co.	2	19,005	11,024
D. & W. Henderson & Co.	11	17,989	39,849
A. Rodger & Co.	7	17,643	12,721
Napier & Miller	5	14,362	18,708
Wm. Beardmore & Co.	1	10,700	15,258
London & Glasgow Co.	1	10,700	13,835
W. Hamilton & Co.	2	9,753	9,941
A. McMillan & Sons	3	9,353	17,055
Ailsa Ship Building Co.	10	8,120	5,919
Wm. Simons & Co.	8	7,250	8,050
Clyde Ship Building Co.	3	6,246	5,103
Grangemouth & Greenock Co..	5	6,241	12,404
Lobnitz & Co.	12	4,534	1,240
Campbelton Ship Building Co..	3	4,509	3,204
Fleming & Ferguson	9	5,829	6,400
Mackie & Thomson	13	5,242	4,193
A. & J. Inglis	2	4,301	10,875
Scott & Sons	9	2,679	1,228
Alley & McLellan	22	2,608	3,157
John Reid & Co.	2	2,511	5,951
Murdoch & Murray	4	1,750	6,083
George Brown & Co.	6	1,694	900
R. Duncan & Co.	1	1,608	15,613
John Fullarton & Co.	4	1,500	2,818
Ritchie, Graham & Milne	14	1,310	2,346
Irvine Co.	2	1,256	153
Ardrossan Ship Building Co.	4	797	2,167
D. J. Dunlop & Co.	1	605	8,670
P. McGregor & Son	6	435	194
J. Shearer & Sons	1	300	1,462
W. Chalmers & Co.	4	257	850
W. Fife & Sons	4	194	290
Ferguson Bros.	1	190	...
D. M. Cumming	3	154	347
J. & J. Hay	2	140	105
Marshall & Co.	1	93	...
Hanna, Donald & Wilson	1	70	83
R. Macallister & Son	3	55	64
Other firms	..	..	376
Total	260	454,739	518,270

In Scotland the year just closed has not a specially bright record, for while in the first six months a fair measure of activity was experienced in most departments, the year as a whole has been one of considerable anxiety and uncertainty, especially for those engaged in ship building, and the steel, iron, coal, and other allied trades. During the later months of the year work at the ship building yards has become so scarce that several employers have been forced to reduce the number of workmen employed, while in the steel and iron trades short time has been resorted to. In shipping the year 1903 has been a most unsatisfactory one, about the worst experienced in the memory of any living ship owner. Freights may have been lower in certain directions in years gone by, but working costs, especially in the matter of coals, were then proportionately lower, whereas this year they have kept high in comparison with the low carrying rates obtainable. Nor is there a prospect of any improvement in the early future, owing to the over-abundant supply of tonnage. The depression in the freight market has naturally been reflected on the ship building trade, for owners have had no encouragement to increase their fleets, while those desiring to make additions hold back from a belief that prices will fall to a still lower level. Then in turn the steel trade has suffered through the decline in ship building. At the beginning of the year marine boiler plates were £6.10 per ton, ship plates £5.15 and angles £5.7.6, all less 5 per cent. Prices receded, and before the middle of January ship plates were £5.12.6, at which figure they remained until the beginning of March, when they firmed to £5.15 to £5.17.6. No further change took place until October, when prices again gave way, and fell in December to £5.7.6. Angles receded in price from the beginning of August, and reached their lowest in December, when £4.15 was accepted by makers. Boiler plates were reduced in price early in May to £6, at which they have since been nominally quoted; but much lower prices are understood to have been taken, plus the Scotch makers' usual extras. During December competition for orders became so keen that a meeting of all the steel producers in Scotland was held at which steps were taken to form an association for the purpose of maintaining prices at a figure which would mean at least no loss to the producer. At this meeting the minimum quotations were fixed at: Marine boiler plates, £6 per ton; ship plates, £5.10; and angles £5, all less 5 per cent. Foreign competition in the steel trade was not much felt until the later months of the year. America continued for the greater part of the year to take considerable quantities of semi-manufactured steel from this side, particularly from Germany, and it was this demand which brought about the improvement in prices experienced here for a time, German competition ceasing altogether at one period. It was the sudden collapse towards the end of the year in the demand from America which largely brought about the fall experienced here, for not only did the demand cease but considerable quantities of part-manufactured steel were sold for export to this country. The absence of the American demand on the continent had also the effect of again letting loose German competition in this market.

Marine engineering, although well situated at the beginning of the year, has been quiet for the greater part of the last half on account of the dullness in ship building. But general engineering has been brisk until within the last three months or so, when activity has slackened off to some extent in certain branches. This briskness had the effect of absorbing the labor displaced from the marine shops, and for that reason machinists on the whole have found fairly good employment during the year. That condition has now undergone some change, and there is not such ample scope for them.

UNION OF OWNERS OF SAILING SHIPS.

The movement for an international union of owners of sailing ships has certainly gained ground rapidly since the Paris conference in December. Your readers will be interested in the terms of the resolutions passed at the conference. The object of the conference was to discover a plan to ameliorate the deplorable condition in which sailing-ship owning is at present. Whether freights at present can be raised to a paying level or not, it is something to get the French owners bound to the same minimum as the ships of other nations, to put an end to the cutting that has been going on in all the homeward markets. The following resolutions were passed:

1. An international association to be called the Sailing-Ship Owners' International Union shall be formed through the existing ship owners' associations and protection clubs in which the vessels are at present entered.

2. The only object of the union for the present shall be to fix minimum rates of freight for the principal voyages in which sailing ships engage, excepting only outward voyages from the United Kingdom or continent of Europe for which no rates of freight shall be arranged, each vessel being left free to make the best terms she can.

3. To carry out this object a committee shall be formed consisting of five representatives from Great Britain, three from France, and three from Germany, who shall meet where and as often as they think desirable in the general interest, with leave, in case of necessity, to each member of the committee to send a substitute of his own nationality who is a member of the union.

4. This committee shall from time to time fix the minimum rates of freight from the various loading ports as they judge best in their absolute discretion.

5. The first members of this committee shall be: Representing Great Britain—Messrs. R. W. Leyland of Liverpool, John Herron of Liverpool, George Milne of Aberdeen, Andrew Weir of Glasgow, J. A Roxburgh of Glasgow. Representing Germany—Messrs. F. L. Loesner-Sloman of Hamburg, F. W. Dahlstrom of Hamburg, George Platte of Bremen. Representing France—Messrs. Eugene Pergeline of Nantes, Eugene Salles of Marseilles, Guengnier of Paris.

6. Such owners as agree to join this union shall bind themselves not to accept for the ships which they control less than the minimum rate appointed by the above mentioned international committee for any voyage for which the committee shall have fixed a rate of freight, and for all such voyages the various owners are prohibited from chartering except on the recognized terms of charter for the particular trade, and without any extra commissions, rebates or back-letters. The owners of French ships, however, shall be allowed to reimburse the charterers the net cost of any extra insurance the latter may have to pay on the cargo, owing to the ship being French-owned.

7. Should the minimum rate of freight not be obtainable, the vessel shall be laid up until such a rate can be got, or if advisable in the option of the owner, the ship may leave the port in ballast.

8. Only ships of 1,000 tons net register and upwards shall be eligible to be enrolled in this union.

9. The various owners joining this union shall remain members thereof from year to year, but may terminate their membership on Dec. 31 in any year on giving three months' written notice (say, on or before Sept. 30 of that year) to the committee.

10. To provide for the expenses of the union each owner

shall contribute in advance £1 per annum for each vessel entered, which shall be the only financial liability incurred.

These resolutions have been the subject of considerable discussion among those interested in Glasgow, and the feeling is distinctly favorable. A meeting of the executive committee is to be held in London towards the end of January, by which time it is hoped owners throughout the country will have made up their minds as to whether they are favorable or not to the proposals being carried out. The proposed union is to be an independent association, owners joining it as individuals and not in groups, clubs or associations. The existing clubs and associations are only being made use of to get into touch with the individual owners, and each individual owner will join the union direct and deal direct with its executive. Not only are practically all the owners of the larger class of British tonnage members of protection clubs, but a large portion of the foreign sailing tonnage is also entered in British protection clubs. France and Germany both have ship owners' associations of their own. The only object of the union is to regulate rates of freight, but if the union becomes strong and gains the confidence of ship owners, it may become influential in other directions, such as quarantine, sanitary regulations, desertions of seamen at foreign ports, etc. All vessels over 1,000 tons register are practically engaged in long-voyage trades, and the numbers of British, French and German are approximately 800, 216 and 226 respectively. The success of the scheme will lie in the manner in which rates of freight are fixed by the executive committee, who are well aware that the present unfortunate state of things is largely caused by the excess of steam tonnage afloat. They do not propose to fix minimum rates for a long time ahead, but to vary these from time to time as the altered conditions of the markets demand, but not above the point necessary to enable ships to pay expenses. The object of the union is to try to prevent a loss. Owners must hunt profits for themselves.

The French bounty, as long as it continues, must always give the French ship owner an advantage, but if the union is completed the bounty will not bear nearly so hardly as it has done in the past on the British owner. French ships cannot lie up, as the bounty is given only while sailing, and anything that will prevent their undercutting rates in order to keep moving will be an advantage to the British owner. As a French vessel is paid a bounty for every thousand miles she sails, and nothing while she is lying in port, the object is not to be always sailing her with a full cargo. To earn the bounty she requires to carry a full cargo only for one-third of the total mileage.

INWARD OR OUTWARD TURN OF PROPELLERS.

I have referred in previous letters to the question whether the turning inwards or outwards of twin-screw propellers gives the highest efficiency. The practice in the British navy is to adopt in-turning screws, while in the merchant service engineers prefer the system of out-turning screws. Mr. R. E. Froude made recently in the ship model tank owned by the British government a number of experiments to show that, although there was an admittedly slight disadvantage so far as maneuvering power is concerned, there was a gain in efficiency of about 1.5 per cent. This was the average deduced from tests with models of three battleships, twelve cruisers, five destroyers and a shallow-draught vessel. The chief argument in favor of in-turning screws is that they permit the arranging of the starting platform in the engine room in the center, so that the engineer standing at the door of the longitudinal bulkhead, has under his observation all the levers etc., of both engines. In the merchant service this result is obtained with out-turning screws by the adoption of heavy front framing for the engines. Some fresh light has been obtained on the subject by research work carried out in the Italian government experimental tank on a large scale. This Italian experimental work shows that the efficiency of the screw varies with its position in relation to the hull of the ship. When the propellers are arranged as far aft as possible and well removed from the shell plating or hull of the ship, the efficiency is practically the same for out-turning and in-turning propellers. If, however, the propeller is built close to the hull there is a loss of efficiency when the propellers turn inward, although it is not very great. When the propellers are placed well forward and close to the hull there is a still greater loss in efficiency with in-turning propellers. The closer the propellers are to the body of the ship the greater the relative efficiency for out-turning screws. The position of the propellers thus affects the variation of efficiency due to the changed direction of their rotation. Out-turning screws increase their comparative efficiency by being removed from the longitudinal plane of the ship, owing to the difference of speed of the particles of water composing the weight current in the region in which the propellers work.

NEARLY 7,000,000 H. P. IN WATER-TUBE BOILERS.

Glasgow, Jan. 4.—Various evidence is afforded of the general approval of the water-tube steam generator for the steam supply for warship machinery. It is adopted for about 5,000,000 H. P., excluding torpedo craft, in which this boiler is a necessity. The power of the boilers in such vessels is equal to 1,783,000 I. H. P. These totals show the extent of warship building throughout the world, for almost the whole of this machinery has been constructed within ten years. Britain comes first, with 1,721,000 I. H. P.; France second with water-tube boilers to the extent of 1,076,000 I. H. P., the principal boilers being the Belleville, Niclausse and D'Allest. Russia's total is 560,000 I. H. P., almost two-thirds of which is the Belleville. The United States is fourth with 494,000 I. H. P., the Babcock & Wilcox representing 333,000 I. H. P. and the Belleville being entirely absent. In Germany the Belleville type figures little—only in two cruisers, the Schulz with 151,700 I. H. P. and the Durr with 119,000 I. H. P. Japan has 186,500 I. H. P., mainly with the Belleville, which is also the case in Italy, where the total is 121,000 I. H. P. In Austria the Yarrow boiler is used for 78,000 of 144,000 I. H. P. Altogether the Belleville boiler represents over 2,000,000 I. H. P., the Babcock & Wilcox 526,300 I. H. P., due to the British and American navies; the Niclausse stands for 433,700 I. H. P. The Yarrow is adopted for 205,700 I. H. P., half of which is on account of use in British ships. The Thorneycroft and Schulz boilers, which are of similar type, stand for 338,700, half of which is in the German navy. The Durr boiler, adopted only in Germany and in Britain, totals 162,700 I. H. P. The Normandy-Sigandy and Laird boilers, of similar design, are adopted for 168,400 I. H. P.; the D'Allest for 158,000; the Guyot another French type, for 71,000; the Reed for 41,800, and the Blechynden for 14,000. The Yarrow boiler is adopted in Holland for 76,500 I. H. P., in Sweden for 52,500, and in Norway for 13,500. Spain has various types, representing 34,000; and Portugal 31,500 I. H. P.

CATERING TO THE MEDITERRANEAN TRADE.

There seems to be great eagerness on the part of many of the steamship lines to secure the Mediterranean trade. While a few years ago only the inferior class of steamships were sent to the Mediterranean now the best afloat go there. Even the great Deutschland, whose record on the ocean has not yet been disputed by those vessels designed to beat her, is in the Mediterranean service for the time being. The Cunard Line, too, has put on some excellent steamers and so has the International Mercantile Marine Co. Now the Anchor Line has just launched on the Clyde a splendid steamship for the New York-Mediterranean service. This latest liner is named the Italia. Special attention has been paid to her passenger accommodations. On the promenade deck there are placed large, airy, and well-lighted staterooms, with two berths in each, for a limited number of first-class passengers; also a handsomely appointed saloon, with piano, library, etc. There are also a comfortable smoking-room, and beautifully fitted bathrooms and lavatories, and a sheltered promenade on the upper and lower bridge decks, which can be used in all weathers. The bridge deck house and main decks have been fitted with steerage berths of a very superior character, for about 1,400 passengers, but so subdivided in different compartments that there will be privacy for the women and children and married people, and no over-crowding anywhere. The Italia, like all the other vessels of the Anchor Line Mediterranean fleet, has been fitted throughout with electric light, which has been installed on a very lavish scale, both on deck and below deck, in every passage and compartment. Well-appointed lavatories and other conveniences for the steerage passengers have been placed on the upper deck, both forward and aft, and inside stairways have been arranged to provide comfortable and easy access for the passengers under all circumstances night or day. Wide shelter decks have been erected over the weather deck, both forward and aft, providing ample promenade accommodation for the large number of steerage passengers to be carried, while these also afford a convenient and airy protection from rain or spray. Particular attention has been paid to the culinary arrangements, which have been specially designed so that the food which is provided for the Italian passengers can be cooked in the manner they are accustomed to have it at home. All the meat and vegetables required for the passengers will be kept in a carefully-planned insulated chamber below deck, which will be kept constantly cool by a large refrigerating machine placed in the engine-room. In order to deal efficiently with any sickness which may occur on board, a fully-equipped surgery and two hospitals have been fitted on the bridge deck quite apart from the passenger accommodation, with separate baths, lavatories, and everything usually found in a first-class hospital on shore. There are also isolation hospitals on the poop deck for infectious cases. The plans of the Italia have been submitted to the Italian emigration commissioners, and received their approval. Special care has been taken to comply with all the requirements of both the Italian and American passenger acts, and it is confidently anticipated that there will be no more comfortable or completely appointed steamers trading between the Mediterranean and New York than the Italia and her sister ships the Perugia and Calabria, which have already proved themselves such favorite vessels with all classes of passengers. It is fully expected that the Italia will be ready to sail from Naples on her first trip about the middle of February, and will perform the voyage from Naples to New York regularly in twelve days at all seasons of the year. It is now thirty-five years since the Anchor Line established a service of steamers from the Mediterranean to New York, which has been prosecuted ever since.

The Hogan Motor Power Co. has been organized at New Haven, Conn., to build gas engines. It will build gas and kerosene engines from designs by John J. Hogan, formerly an electrical engineer at Yale University. The officers of the company are: J. J. Hogan, president; Louis F. Miller, secretary; Howard E. Gates, treasurer; G. Edward Osborn, sales agent.

Congressman Scudder has introduced a bill in the house of representatives to increase the pay of surfmen in the life-saving service to $75 per month.

CONGRESSIONAL AID FOR AMERICAN SHIPPING.

The great battle for the upbuilding of American shipping in the foreign trade is now on. Lined up in opposition are the agents of foreign shipping. Lined up in advocacy are the friends of American shipping. Congress and the nation will be given an opportunity—long sorely needed—to measure, in the open, the character of the opposition to American shipping legislation. Nothing could be more pleasing, nothing more inspiring to the friends of American shipping than this battle in the open.

The house merchant marine and fisheries committee on Thursday, Jan. 14, began a public hearing on the bills proposing to create a commission to investigate the condition and needs of American shipping in the foreign trade. President Roosevelt in his last message recommended the appointment of a commission for this purpose, the members to be composed of three cabinet officers and such a number of senators and representatives as congress may desire. This will probably attract but little foreign shipping opposition, and the measure, therefore, is likely of early passage.

On Thursday, Jan. 21, the senate Philippines committee will have a public hearing on the Frye Philippines shipping bill, a bill that purposes placing the carrying trade between the United States and the Philippines under the American flag, through the application of our coastwise laws to that trade. This bill is being bitterly fought by the New York agents of foreign steamships. Although the bill was favorably reported from the senate Philippines committee nearly a month ago, so active has been the work of the agents of foreign shipping interests, and so strenuously have they denied that there is a sufficiency of American steam shipping available for the carriage of the trade between the Atlantic ports of the United States and the Philippine islands, that Senator Lodge, chairman of the committee on the Philippines, has agreed to give a public hearing, in order that each side to the controversy may state its case. It will be edifying to a degree to thus smoke out, and bring into the lime-light, the foreign shipping interests that have hitherto secretly, and in the dark, carried on their unrelenting warfare of opposition to American shipping interests.

Already the leading New York organ of the foreign shipping interests is planning the campaign that the foreign shipping agents should conduct. This newspaper, with a frankness born of repeated successes in opposing American shipping interests, calmly points out just how the fight should be conducted. It is desirable, this organ points out, that the foreign shipping agents should not themselves, and in person, appear publicly before congressional committees in opposition to this bill. It might be thought, says this organ, that the motives of the foreign shipping agents were selfish! So, it goes on to point out that this Philippines shipping bill is a dark plot and a deep design of one James J. Hill, who controls several thousands of miles of trans-Mississippi American railroads. Through an insufficiency, this organ falsely alleges, of American steam shipping available for carrying the commerce between the Philippines and the Atlantic ports of the United States, the traffic will be diverted to the Pacific coast ports of the United States, and heavy railroad rates overland will be charged, and great American manufacturing interests thus injured. So, says this organ, the eastern trunk railroads should step to the front and make the fight, the foreign shipping interests and their agents remaining discreetly in the background. The only fly in this batch of ointment is that there are at the present time two American steamships available for every cargo that will offer during next year for transportation from the Philippine islands to the Atlantic ports of the United States. That is one of the "little jokers" that Senator Lodge will have up his sleeve when the foreign shipping agents present their case and repeat their falsehoods before his committee. Another will be the fact that there are four or five American sailing ships equally available for this same business for every cargo that there will be offering next year. The owners of these American steamships and sailing vessels will be present before the committee, in person, fortified with proof of their ownership, fortified with the facts of the tonnage they have available, fortified with the knowledge of the volume and value of the trade to be carried, in order to utterly and thoroughly answer the mis-statements of the agents of the foreign shipping interest.

In the light of these facts, already well known to the officers of the trunk railroads in the east that have been urged to become stalking horses for these agents of foreign shipping interests, there will be no railroad interests there opposing, although they may be there favoring, the passage of the Frye Philippines shipping bill. But this does not exhaust the weapons of intrigue that the agents of foreign steamships expect to be able to use. The eastern cordage manufacturers have been led to believe that a serious blow will be struck at their interests if the Frye Philippines shipping bill is passed; they have been told by the agents of foreign shipping that there will be a great increase in the rates of freight that American ships will charge for the carriage of hemp from the Philippines to Boston and New York. And this cordage interest, therefore, is expected to thrust its fingers into the congressional fire in order to pluck out the chestnuts for the foreign shipping interests. This scheme is likely to fail for either of two reasons, viz: 1. The cordage trust people well know that the American steam and sail tonnage that is amply able to carry ten times the 55,000 tons of hemp that will offer, will be very glad indeed to earn the $11 or $12 per ton that is now being paid to foreign steamships for carrying it. 2. The cordage trust would scarcely feel at ease in opposing a bankrupt and despairing American interest, such as our shipping is, in view of the fact: *a.* The cordage trust now enjoys exemption from export duties on exports of hemp from the Philippines to the United States of three-eighths of a cent per pound, an exemption denied to exports of hemp destined for other countries; and *b.* This same cordage trust enjoys a duty of 45 per cent. upon the manufactures of hemp imported into the United States, and thus has a wall of stupendous heights to protect it in securing the most liberal prices for its manufactures in the home market of the United States, a dual protection that fortifies the trust to enlarge its foreign markets for hemp manufactures in competition with foreign manufacturers in the world's markets, and at the world's minimum prices—prices, by the way, far below the prices charged by the cordage trust for their products consumed in the United States. It is scarcely to be expected that for the purpose of promoting the interests of foreign shipping agents the representatives of the cordage trust are going to voluntarily subject themselves to the searching and embarrassing cross-examination that awaits them if they put in an appearance. The cordage trust prefers to keep in the background, in such a contest as this, quite as much as do the agents of the foreign shipping interests.

From this it will be seen, as has been explained, that the foreign shipping agents will be forced into the open, into the sunlight, into the clear atmosphere of national publicity, there to state their case and help along their work for the destruction of American shipping. One more expedient is available for the foreign shipping agents, but they will scarcely dare to resort to that, to wit: The employment of attorneys to plead their cause. There is talk of a distinguished Philadelphian, once an attorney-general of the United States, being retained to fight the battle for the foreign shipping interests. But, if he or any other attorney or attorneys are there to fight American shipping, to protect and advance foreign shipping at the expense of American shipping, to have any kind of standing before the committee they will be obliged to name their clients and state just whom they represent.

Then there is still another bill that is giving much disquiet to the foreign shipping interests and which they are diligently at work to defeat. This is the bill, copies of which have been introduced in each branch of congress, with the indorsement of the secretaries of the navy and of war, and doubtless with the approval of the president, requiring the employment of American ships in the ocean transportation of government supplies and stores. In accord with the policy pursued by our government for the past forty years to hasten the ruination of American shipping, the annual supply bills have required that the shipment by sea of government supplies should be given to the lowest bidders, foreign or American, and as a consequence, often because of the saving of a few paltry cents per ton, foreign ships are employed while American ships have been permitted to remain idle because they could not afford to carry these government supplies at the minimum freight rate offered by foreign ships.

The foreign shipping agents have protested against the passage of the bill in question, on the ground that it will increase the freight rates on the shipment of government supplies. Congress may be appalled at the thought of an American ship earning a living rate of freight in carrying the supplies shipped by the government to its oversea possessions and stations, but we doubt it. The airing of the facts in committee and in congress will afford an instructive lesson, and point with unerring accuracy to the disposition of its members with reference to American shipping in particular and in general. Foreign shipping agents dread such a discussion, and if they can succeed in stifling this bill in committee they will be greatly relieved and considerably benefitted. Every forward step that congress takes in behalf of American shipping—however halting a step it may be—will make it easier for congress to take another step along a grass-grown and almost hidden pathway. Dread of this possibility—this fearsome probability—will stimulate the foreign shipping agents to avail themselves of every means whereby the defeat of this measure may be encompassed. In this case it cannot be said that there are not enough ships available—the agents of foreign shipping cannot and dare not make that assertion. They will not state that all other foreign governments employ only their own shipping for the transportation of government supplies—they will try to deny or conceal this fact. But there will be those present at the hearings on that bill, and there will be those fortified upon the floors of each branch of congress with the documentary proof of the fact that Great Britain, Germany, France, Italy, Japan and all other nations employ only their own vessels for the ocean transportation of government supplies. So, the mere question of cost will be their sole refuge. They will assert—these agents of foreign shipping will—that it will cost more if American ships are employed. It will be a mere conjecture, only a prediction; they will be unable to prove that assertion; and congress will surely take the measure of it, not forgetting the source of its inspiration. But even if it should cost more, what of it? Suppose it does raise freight rates. It will also help to raise a dormant and dying American industry. It will raise up ships available for the use of the United States in time of need. It will mean more American shipmasters, more American officers and more American seamen, ready to defend their country afloat in time of trouble. What if it does cost more—is the game not worth the candle? It will raise up the fighting arm of the nation and strengthen it—that is what this bill and the Frye Philippines shipping bill will do—and for these reasons they will be passed by a patriotic American congress, despite the misrepresentations and machinations of the agents of foreign shipping interests.

ENGINEER BOND ON ERIE CANAL ENLARGEMENT.

In discussing the enlargement of the Erie canal to accommodate barges of 1,000 tons capacity, State Engineer Bond of New York says that it will unquestionably be the greatest project any single state has undertaken. The work will contribute greatly to the welfare of the laboring classes of New York state for the next seven years. Mr. Bond says:

"The construction of the canal will give employment to all classes of citizens, from skilled engineers and designers in structural iron, architects and electrical engineers through the several branches of skilled mechanics to the so-called laborer, all of whom will receive good pay throughout its construction. In 1904 and 1905 the expenditure is limited to $10,000,000. Should the work be so progressed as to complete it in seven working years it would call for the expenditure of $15,000,000 for the remaining five years from 1906 to 1910, inclusive, which, together with the almost positive increase of appropriations for good roads, say a total of $3,000,000 to $5,000,000 a year, would give a total expenditure of from $18,000,000 to $20,000,000 a year for the five years and would bring undoubted prosperity to all classes of citizens that depend upon their labor, whether skilled or otherwise for their support. The problem to be undertaken involves the building of 445 miles of canal, of which substantially 290 miles are entirely new construction and 155 miles will be the reconstruction of the present existing canals.

"The law under which this construction will be conducted and which authorizes this vast expenditure directs the superintendent of public works and the state engineer, within three months after the comptroller has issued the bonds, from the proceeds of which the expense of the work will be met, to proceed to improve the Erie, Oswego and Champlain canals so that the canal prism shall in regular canal sections have a minimum bottom width of 75 ft., minimum depth of 12 ft. and minimum water cross-section of 1,120 ft., except at aqueducts and in cities and villages where it may be deemed necessary to modify these dimensions. In rivers and lakes the minimum dimensions shall be 200 ft. bottom width, 12 ft. depth and a cross-section of 2,400 ft. The locks shall be 328 ft. long and 28 ft. wide.

"In considering the best method of conducting this great enterprise, it is thought wise to proceed as though the state were a private corporation undertaking a work of equal magnitude and to lay out the work and make final cross-sections at such points along the canal as can most accurately be determined at this season of the year and also of such pieces as by reason of their extent or difficult nature would require the longest period of time for their completion. The most formidable construction will be on leaving the Hudson river at Waterford and extending 1¾ miles westerly into the upper Mohawk river above Cohoes. This will necessitate the construction of two single locks and three double locks at this point and also a dam across the Mohawk river 2,400 ft. in length (of which 1,200 ft. will be spillway) and 58 ft. extreme height. The dam will raise the water level in the Mohawk river as far west as Vischer's Ferry, a distance of 10½ miles.

"At and near Little Falls there will be a very heavy construction through a hard, tenacious rock formation, but by reason of the interruption to canal navigation, which will be caused when the work is begun, and from the necessity of particular study in order to obtain the most economical construction, it has been thought wise to leave the details of the location at that point until spring. The point selected for the immediate operation will begin at what is known as Fort Bull, on the summit level of the Erie canal, about 4 miles west of Rome, and continuing westerly a distance of 10½ miles to and including the harbor at the head of Oneida Lake. This stretch of canal includes two locks, with a total drop from the summit level to Oneida Lake of substantially 47 ft. Going westward, the next section begins in the Seneca river at a point north of Port Byron and westerly 7 miles to a point near Savannah. It is expected that this section will give a typical test of the contractors' views of unit prices for material to be removed by dredging in its various forms.

"It is then proposed to take a section beginning at the westerly limits of the city of Rochester and working west to the junction with the present Erie canal near South Greece, where there will be an unusually heavy earth excavation, with a possibility of encountering rock near the bottom of the prism, and this section will, therefore, be one of the first to receive attention. All the work above described will be new construction in new location and will not include the prism of the present canal for any of its structures.

"Proposals will be called for upon the sections heretofore described as soon as the plans can be prepared with a view to having contracts awarded and actual construction commenced some time near May 1, 1904. That portion of the work herein outlined is but the beginning of the total construction, which will be carried on from year to year through the several sections of the state so as to preclude the possibility of some large piece of work delaying the final completion of the entire work. In the early spring work will be begun and progressed along the Champlain and Oswego canals. The work of final location of locks and dams, with the necessary soundings and boring through earth and rock to determine the character of the soil and rock, and what is necessary for a proper foundation for the several structures, will proceed as rapidly as circumstances will warrant. In the construction of the Erie canal provision will be made for a supply of water sufficient to handle 10,000,000 tons of freight per canal season. The canalization of the Tonawanda creek, between the Sulphur Spring guard lock and the entrance to the Niagara river at Tonawanda, will also be among the first to receive attention."

SHIP SUBSIDIES ARE DESIRABLE.

From the Denver Republican.

From one hundred and fifty to two hundred million dollars are paid annually in freight on our foreign commerce, a contribution made by the American people to the shipping of Great Britain and other foreign countries.

This vast expenditure might be turned into the hands of American ship owners and sailors if our shipping engaged in foreign trade were built up to what it should be.

In the days of wooden ships our merchant marine was, if not the largest in the world, at least a rival of that of Great Britain. But with the introduction of iron and steel ships American shipping declined, and Great Britain, being farther advanced in its iron and steel industries, constructed iron and steel ships. Our shipping was driven from the high seas, and since then we have been making an enormous annual contribution to maintain the shipping of Great Britain, France and Germany.

Fortunately, our coastwise trade was reserved for American ships, and from it foreign shipping is excluded. But this exclusion is the direct result of legislation; and what legislation has done directly for our coast shipping it might well do indirectly for that which would sail the high seas and engage in foreign trade.

By a policy of enlightened selfishness we have built up great iron, steel and other industries, which in the aggregate give employment to hundreds of thousands of men and contributes in an enormous degree to the prosperity of the country. The time has come to take a notable step forward along the same line of enlightened selfishness in behalf of the American people. The time has come to restore American shipping and send the American flag flying at the mast of hundreds of ships over all the seas of the world.

Trade follows the flag. Established lines of communication develop commerce. What we need is a large American shipping both for the revenues that would be obtained from the carrying trade and because of the stimulus that established lines of communication between American and foreign ports would give to our commerce with other countries.

This calls for subsidies framed along lines that would not work injustice, but would tend to develop all kinds of American foreign shipping. It would be an amplification of the protective tariff policy. It would be an application of that policy to the shipping industry. Our iron and steel industry is sufficiently developed to enable it to supply the material for American ships, all that is needed being an assurance to ship builders and owners of a fair profit on their investments.

A WELL-DESERVED PROMOTION.

The nomination of Col. Alexander McKenzie to be chief of engineers of the army is a well-deserved promotion. It is an appointment which will give genuine pleasure to everyone who knows Col. McKenzie. All know that Col. McKenzie would never have sought the office; it is a case, rare indeed, of the office seeking him. He is a man who must be personally known to be appreciated, for Col. McKenzie would never blow his own trumpet. He entered West Point during the civil war and graduated as a first-lieutenant in 1864. He has been connected with the engineering corps since his graduation and has patiently plodded in the ranks. Two years ago he had advanced no further than a lieutenant-colonelcy. It took him thirty-five years to reach the rank of colonel. During the past ten years he has been associated with river and harbor work and naturally had much to do with Mr. Burton, chairman of the house committee on rivers and harbors. It was Mr. Burton who urged the advancement of Col. McKenzie, and as both Secretary Root and President Roosevelt were favorably disposed to it the nomination was made.

At the works of the Detroit Ship Building Co. on Saturday last the hull of the large side-wheel steamer City of Buffalo was cut in half, in order that a new section 42 ft. long might be inserted amidships. After the hull had been severed the forward section was by means of the shear legs engine and two powerful capstans moved 42 ft. distant from the after section, which remained stationary. It took forty minutes to traverse the 42 ft. The new section, which will now be built between the two parts of the divided boat, will cost about $170,000. The alterations will increase the Buffalo's carrying capacity about 60 per cent. without diminishing her speed or materially increasing her cost of operation. The work is being done under the guidance of Mr. Frank E. Kirby, who designed the steamer.

A fine chart of the St. Clair river, with the canal at the lower end and the stretch of river near Port Huron at the upper end on large scales, has just been issued by the United States lake survey, and may be had with edges taped at the Marine Review office for 50 cents or by express to any address for 75 cents.

Business men of Duluth-Superior have pledged about $82,000 for the construction of a big steamer in order that the yard at West Superior may be busy during the winter. The committee in charge believes that the project will now be an assured success.

LIVERPOOL SHIPPING LETTER.

Liverpool, Jan. 4.—Although, as I stated in a previous letter, ship building at Belfast is just now experiencing a slackness of orders, the return of the tonnage output during 1903 at one particular ship building yard at least establishes probably a record. Messrs. Harland & Wolff, the builders of so many well-known and successful vessels engaged in the North Atlantic trade, have launched eight vessels during the year, but they have each been of such enormous size that their gross tonnage amounted to the unprecedented total of 110,465 tons, and the indicated horse power of the engines 100.400. In no other British ship building yard will such a high tonnage average of vessels built be found, and this is a striking illustration of the fact that this is an age of big ships. This firm holds the distinction of having built the three largest vessels afloat, namely, the Celtic, Cedric and the Baltic, the latter vessel launched on Nov. 21, being nearly 24,000 gross register, and intended for the White Star Line's New York service. In addition to their enormous output of new tonnage, Messrs. Harland & Wolff have had in their hands the large steamers Mayflower, Canada and Majestic for extensive overhaul, renovation and reconstruction, as well as extensive repair work to the steamers Gaika and Merion, and the warships Hermes and Melampus. The work now in hand includes large steamers for the Union-Castle Line, Bibby Line, Hamburg-American Line, Holland-American Line, the Royal Mail Steam Packet Co., and a cross-channel steamer for the London & North-Western Railway. They are also carrying out an extensive overhaul and refit to a first-class British cruiser and to the R. M. S. Norman.

The annual report of the gigantic undertaking at Manchester known as the British Westinghouse has just been issued, and a profit of £107,000 is disclosed, which allows of the payment of the full preference dividend, contrary to expectation. It should, however, be stated that £60,000 of such profits are due to special discounts, owing to the works at Manchester being yet incomplete and necessitating heavy purchases from the American company. The British concern is, however, flourishing amazingly, judging by the orders received. In 1901 they represented £738,000; in 1902, £938,000, and in 1903, £1,657,000. This is progress which must indeed be encouraging to preference stock holders, and promises well for good dividends on the ordinary shares when the works are completed and in full swing.

Plans for the organization of an international union of owners of sailing ships are gaining support from many who have hitherto expressed themselves in pessimistic terms about the high aims of Mr. R. W. Leyland and his international understanding relating to minimum freight rates. The fact that the Germans, who control 222 sailing vessels of 387,027 tons, have decided unanimously to enter the international union and agree to the minimum rate proposals, will have its weight with waverers here, who have so far not so seriously entertained the proposed arrangement because they feared there would not be unanimity among the foreign owners. The French owners, representing 206 sailing vessels of 366,000 tons, being also unanimous with their German colleagues in the conference, it now rests with British owners, who control 770 vessels, totalling 1,300,000 tons, to organize or defeat this union of European ship owners. Although the English opinion is not expected to be unanimous there is no doubt entertained by Mr. Leyland that they will authorize an agreement with the rules framed at the Paris conference and thus give the union a chance of achieving some of the results which its promoters have in view. While the first efforts of the union will be in the direction of improving freights, matters affecting trade and other questions are eventually to be dealt with.

I have heard it said that one of the earliest questions which will engage the attention of the house of commons after parliament assembles early in February, will be the proposed discontinuance of the admiralty subsidies paid to various shipping firms for the call on certain of their ships for employment as armed cruisers in time of war. Several of these ships are well known in the North Atlantic trade, and the withdrawal of these annual payments at the present time, when shipping is so unprofitable and the outlook so unpromising, will not be relished by the ship owners concerned, and may perhaps be resisted on the ground that the notice is too short. That these grants are likely to be withdrawn was foreshadowed by a statement made by Mr. Arnold Foster when the naval estimates were under discussion last year.

From the annual circular just issued by the Allan Line it appears that during 1903 the Allan steamers carried westward from Liverpool, Moville and Glasgow to Canada and the United States, no fewer than 54,502 passengers, against 40,129 in 1902, an increase of 14,373. The outlook for 1904 is said to be very good for so far as present indications go, there will be a big movement to Canada during the current year, and evidently the Allan Line anticipate it, judging from the new ships they have recently ordered. Their fleet, including the two turbine steamers of 12,000 tons each, now under construction, consists of thirty steamers of 158,026 tons, and it is a matter of some satisfaction here that they have again secured the Canadian mail contract for 1904. Messrs. Allan Bros. are well known as a go-ahead shipping company. They were the first to adopt steel in the building of their ships, they led the way in regard to fitting their passenger ships with bilge keels, and now they are showing the way in regard to turbine engines. May their latter enterprise harmonize with their past successes in initiative effort.

The Canadian Pacific Ry. Co. is giving evidence of much activity at this port, and recent developments in its operations here have necessitated the removal of their headquarters in Liverpool to the spacious building vacated by the Dominion Line. The company will also shortly enter into possession of their splendid new offices in London, which will be the headquarters of the company on this side of the Atlantic. The C. P. R. also intends to launch out further by maintaining a weekly service of steamers in the summer season between Bristol and Canada, in addition to the regular Liverpool service and probably a service from London also.

White Star Line officials announce that they have decided to make Marseilles the principal port of call for their big liners in the Boston-Mediterranean trade. The vessels will sail from Boston, and after touching at Marseilles will proceed to Alexandria, and put in at the Italian ports on the return voyage. The new service will be inaugurated by the steamer Republic, which is due at Marseilles on Jan. 15. In this connection I am authorized by the White Star Company to deny that there is any truth in the report being circulated just now that Messrs. Harland & Wolff are about to build a steamer for them 30 ft. longer than the Baltic recently launched, which is the largest vessel in the world.

THERMITE—INVALUABLE AGENCY FOR REPAIRS.

Emile Guarini in the current number of the Engineering Magazine has a most interesting article upon mechanical and metallurgical applications of aluminothermics some examples being given of repairs to stern posts and shafts of vessels. This extraordinary process makes it possible to cast iron anywhere at will without fuel and with the minimum of equipment, to cast all kinds of metals with the aid only of a match and to make the metals serve for their own fusion. The advantage for repair work is at once apparent. This method was discovered by Dr. Goldschmidt of Essen and is described as follows: If a mixture of pulverized aluminum and a metallic oxide be ignited at a single point combustion proceeds without further supply of external heat, without any combination with the atmospheric oxygen and with the development of a temperature estimated at 3,000° centrigrade. The reaction reduces the oxide, yielding the metal pure and free from carbon and leaves a scoria of aluminum oxide or artificial corundum. In industrial practice the oxide of iron is naturally the one most often used. The mixture of aluminum and ferric oxide has been given the commercial name "thermite." Thermite on combustion yields a soft homogeneous iron, which, on account of the high temperature to which it is raised, has the property, when poured upon a metal part which is to be repaired, of softening the surface over which it flows and uniting intimately with it. The reaction is carried on in special crucibles made of sheet iron lined with magnesia. The corundum may be decanted or the iron poured from beneath by unstopping a hole prepared in advance in the bottom of a so-called automatic crucible of conical steel. To light the thermite the crucible must first be thoroughly dried. Into it are then poured a few teaspoonfuls or many kilograms of thermite, according to the requirements of the operation to be performed. Upon the top of this is then placed a small pile of a firing powder made of aluminum and peroxide of barium. The operator, having put on a pair of smoked glasses, then fires the powder by means of a match fuse or a bar of iron heated red hot. The reaction of the thermite begins at once and is complete in less than a minute. More of the reagent may be added during the reaction if needed. The iron produced may be improved by adding to the thermite about 0.3 or even 0.5 per cent. of ferrosilicon. Manganese or titanium may also be added. The addition of 100 to 250 grammes of pig iron per kilogramme of thermite yields a hard, fine-grained and very malleable steel. With a large increase in the amount of iron added the resultant product is a hard malleable tool steel. Titanium may, of course, be added to this mixture.

It is not difficult to perceive the many possible industrial applications for a process which thus permits the production of temperatures so high in so short a time and with so little apparatus. One of the most important is the welding of iron and steel pipes or tubes. The faces to be welded are dressed and fitted to one another and then pressed together by a suitable device. The joint is then surrounded by a mold which varies in form according as the tubes are large or small in size, vertical or horizontal in position. Into this mold is poured the incandescent mass produced from the thermite. The heat which it imparts raises the metal of the tubes to the welding temperature. This operation is particularly valuable in the making of bends or coils in which defects often develop after the bending is completed and the otherwise finished piece is, on that account, rejected. The defective part can now be cut out and replaced by a sound section welded in with thermite. In like manner shafts may be welded; defective, worn or broken machine parts, whether of cast iron, steel or wrought iron, may be repaired. The possibility of repairing large machine or structural parts without dismantling the whole construction or taking the broken piece out of its place, alone implies great saving of time and labor. Thus the fractured crank shaft of a Rhine steamer, although 10 in. in diameter, was repaired between 5 o'clock in the evening and 10 o'clock the next morning. The work required 250 lbs. of thermite. The broken stern post of the Hamburg-American liner Sevilla was also repaired in this manner. In short the method carries the repair operations to the break with the utmost ease of transport and range of adaptation instead of requiring the broken part to be brought to the repair shop.

Tarr & James, Essex, Mass., are laying the keel for a wooden vessel for Cunningham & Thompson of Gloucester, Mass.

SEEN AND HEARD ON THE LOOKOUT.

Taking into consideration the number of vessels that are engaged in the transportation of oil, comparatively few of them have been destroyed or even damaged by fire. This is due, of course, to the numerous precautions that are taken with the vessels. Not many years ago a large fleet of sailing vessels carried oil in barrels from North Atlantic ports to Europe, returning with the empty barrels. The oil-soaked condition of their holds effectively prevented these vessels from engaging afterwards in the East India trade, for instance, and coal and lumber was about the only freight for which they could be chartered. Steel steamers having steel bulkheads separating the oil from the boilers and engines are now used to carry oil in bulk. The steamers are made very tight in all their parts and are specially equipped from a fire standpoint. It requires only a few hours to pump the cargo on board, a similar length of time to discharge it. Not only can more oil be carried in this manner, but the expense of carrying empty barrels across the Atlantic is entirely eliminated. It should also be known that by a generous application of steam into their holds these steel boats are made fit to carry even sugar and spices without fear of having them damaged by the previous load's pungent perfume. Oil vessels bound for ports that lack facilities for receiving oil in bulk load what is known as "case oil," or oil in tin cases. As these tins need not be returned to the shipper, and are also easier to handle than the barrels, the improvement of this way of delivering oil in all parts of the world is obvious. And in proof of the correctness of saying "to all parts of the world," may be mentioned the fact that a large Standard Oil vessel recently cleared with case oil for Celebes—an island that was formerly only suggestive of cannibals and savages. Besides the steamers mentioned, tow barges have been expressly built to carry oil in bulk. Having in one of the Review's former issues recorded the opinion of experienced seamen as regards tow barges, it need only be said here that in the case of oil barges must be added to all the dangers that ever follow in the wake of these self-insufficient craft the perils arising from being loaded with this inflammatory commodity.

A few years ago the Legal Aid Society established branches in the principal seaports to extend the protection of the law to even the most humble of mariners. Upon a visit to New York city a short while ago I called at the branch office of this society. The lawyer was in court pleading the case of an ill-used fireman, and the continuous advent of distressed mariners loudly proclaiming their need of legal advice or lawful redress was a noisy testimonial both to this institution's popularity and the lawyer's excess of business. A scrap book containing clippings descriptive of occasions when the society was able to aid some persecuted seafaring man proved interesting reading. On the first page appears—well, some poetry, as follows:

This is the yarn that was told to me,
By a battered and tattered son of the sea,
And he ain't like some of the swabs I've seen
As would go and lie to a poor marine—reporter.

And then came an account of how some captain had been nailed up in a barrel to avoid a subpoena-server. As it was also stated that the elusive captain is still at large it must be presumed that he managed to escape from the barrel. A further perusal of the scrap book's assorted information anent the dark side of the seaman's proverbially so bold and free life shows that many firemen who had their money illegally withheld, while sailors, without losing part of their salary on account of it, had furnished needed amusement to their superiors by permitting themselves to be "triced up," "or strung up" by the thumbs. The last two modes of administering punishment may be called the refinement of cruelty, while discussions in which belaying pins and capstan bars figure by way of argument frequently occur. Interspersed with these were edifying tales of boarding house masters retaining seamen's clothing; of runners presenting bills for imaginary services, and of sailors who have deserted from their vessels for fancied or other grievances. Though unable to comment on the legal aspect of any of the cases at present pending in the courts, we must all agree that the seamen's branch of this society has taken up ideal and appropriate quarters—opposite the Battery, in close proximity to the British consul's shipping office, and in the very heart of sailor town.

All along the Atlantic coast the advent of the so-called "old-fashioned" winter weather directly after new year was conducive to discomfort for the inhabitants in general and the seafaring folks in particular. Upon a recent visit to Boston and vicinity I noticed the fishermen of Hull lined along the beach in anticipation of wreckage due from a large steamer which a few days before had been sunk, it was said, in a collision off Boston light. The term "wrecker" still suggests to our minds a rapacious individual who, without heeding the imminent probability of loss of life resulting from his act, lures a vessel on the rocks. Those wreckers on the Hull beach, however, presently volunteered to man the lifeboat and at great risk to themselves succeeded in rescuing the crew of a small, waterlogged lumber schooner. The Portuguese settlers on Peddock's island (Boston harbor), prevented by the weather from hauling their lobster pots, were harvesting an unexpected crop of most welcome fuel—undoubtedly some lumber vessel's deck load—and besides the two wrecks before mentioned, nothing could be seen across the wide expanse of tumbling water but a pilotboat that hove to a few miles above the light—veritably the personification of grim watchfulness. In New York harbor several tugs have been greatly damaged by ice floes, and a schooner after successfully weathering Cape Hatteras was ignominously vanquished by the ice off Governor's island. Amidst all this arctic scene a trim auxiliary schooner yacht leaving port looked decidedly out of place; but all advocates of the unqualifiedly seaworthy yacht, as against the boat built solely for racing purposes, may be pleased to hear that the craft referred to was hove to during a typical Cape Hatteras storm and making fine weather of it. Several other yachts which are now cruising in West Indian waters may shortly be expected to go to the Mediterranean, either to witness or to participate in the race from Nice to Gibraltar. To the seemingly inevitable cup a prominent French club, "Club Nautique de Nice," will add 2,500 francs, while the "Societe Nautique de Marseilles" increases this amount by 1,250 francs as a prize for the successful contestant. Though the Mediterranean is called an inland sea, one is apt to encounter there splendid imitations of North Atlantic weather, and yachts participating in the February Nice-to-Gibraltar race must essentially be seaworthy craft.

GOVERNMENT SUPPLIES IN AMERICAN BOTTOMS.

Senator Frye lately introduced a bill in the senate, the purport of which is briefly as follows:

"That vessels of the United States, and no others, shall be employed in the transportation by sea of coal, provisions, fodder or supplies of any description, purchased pursuant to law, for the use of the army or navy; but this section shall not be construed to prohibit the transportation of such articles by any vessel owned by any department of the government."

The committee on commerce, to which this bill was referred, has recommended its passage. The committee says that the successful steamship line bidder for carrying freight for the war department, exclusive of silver, for the Philippine government for the past calendar year between New York and Manila through the Suez canal and return was an English corporation, at a sliding rate approximating $5.90 per ton. Not a ton of this freight was carried in American bottoms. The transportation of British troops and supplies in other than British vessels is prohibited by department regulations; and that while in Germany and France no law or regulation prohibits the use of foreign bottoms for such transportation it is the practice to employ vessels of their own country. This policy, says the committee, is a wise one and should be adopted by the United States for many reasons, even though the cost of such transportation would be somewhat increased thereby. The following list of American steamers, furnished by the commissioner of navigation, are now, or will be before the end of the calendar year 1904, employed in trade between Pacific coast ports and Hongkong:

Name.	Gross tons.	Sp'd.	Year built.	Owner.
Siberia	11,284	19	1903	Pacific Mail Steamship Co.
Korea	11,276	19	1902	Pacific Mail Steamship Co.
Manchuria	13,500	16	1903	Pacific Mail Steamship Co.
Mongolia	13,500	16	1903	Pacific Mail Steamship Co.
City of Pekin	5,097	14	1874	Pacific Mail Steamship Co.
China	5,060	17	1889	Pacific Mail Steamship Co.
Peru	3,528	14	1892	Pacific Mail Steamship Co.
Minnesota	21,000	14	1903	Great Northern Steamship Co.
Dakota	21,000	14	1903	Boston Steamship Co.
Tremont	9,606	14	1902	Boston Steamship Co.
Shawmut	9,606	14	1902	Boston Steamship Co.
Lyra	4,417	10	1901	Boston Steamship Co.
Hyades	3,753	10	1900	Boston Steamship Co.
Pleiades	3,753	10	1900	Boston Steamship Co.
Victoria	3,502	..	1870	Northern Pacific Steamship Co.
Olympia	2,837	..	1883	Northern Pacific Steamship Co.
Tacoma	2,811	..	1870	Northern Pacific Steamship Co.

The first six vessels in the foregoing list trade from San Francisco; the others from Puget sound ports.

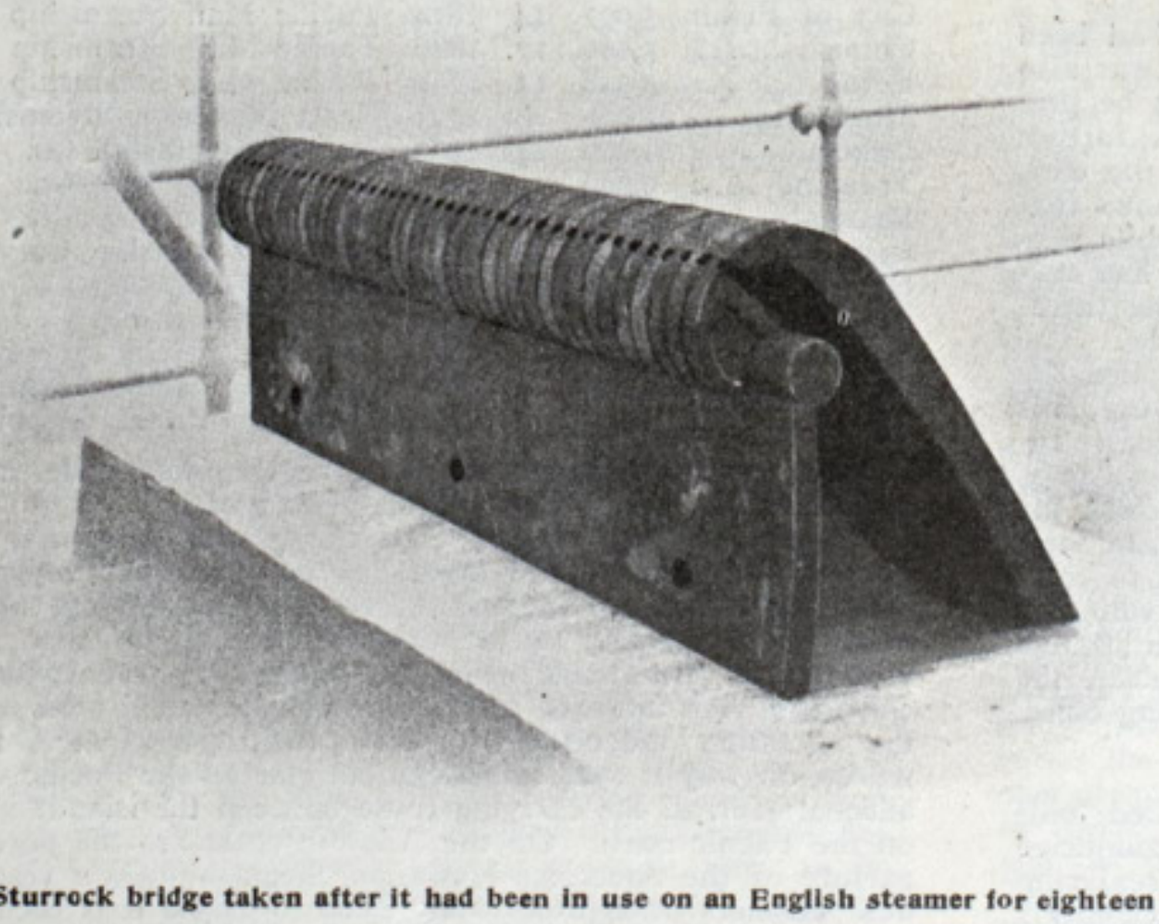
"Some of these vessels," says the committee report, "already go direct to Manila and others so prolong their voyage. The American-Hawaiian Steamship Co., the International Mercantile Marine Co. and the Pacific Coast Steamship Co. also maintain steamers on the Pacific which are adapted to trade with the archipelago. An increase in rates or volume of business would be the necessary inducement to have them participate. In other words, on July 1, 1904, American bottoms on the Pacific would be adequate for all the carrying trade between the islands and ports on the Pacific coast. On the Atlantic coast are the ports of departure of the American-Hawaiian Steamship Co.'s vessels; ten new steamers of approximately 8,000 to 12,500 tons each ply between New York, San Francisco, and Honolulu. The International Mercantile Marine Co. has six large steamships. There are also four Luckenbachs, with a total of 22,000 tons, and two of the Michigan Steamship Co. Large American sailing ships also must be considered, which go around the horn on their 120-days' journey to China and the Orient and also engage in the South African trade, and whose total tonnage is reported as 122,000, but rarely touch at Manila. Were the insular trade rates high enough to induce American bottoms on the Pacific and the Atlantic not now so engaged to enter the same, it cannot be denied that there are sufficient American bottoms at this time to carry such trade. The transportation of supplies for the army and navy at remunerative rates would be a very material factor in attracting American vessels to this trade, and to give them the exclusive privilege of such transportation would be a wise and legitimate step in the direction of encouragement of our merchant marine."

PATENT FURNACE BRIDGE WALL.

Mr. Alexander Hynd, Western Reserve building, Cleveland, is about to introduce on the great lakes the Sturrock patent smoke consuming bridge wall for boilers, which is illustrated herewith. Mr. Hynd has secured from the Scotch owners of the patents the agency for the lakes and adjacent territory. This furnace is in use on numerous British steamers and on several well known steamers of our own Atlantic seaboard, and Mr. Hynd, who is himself an engineer of rare judgment, thinks so well of it, after a thorough examination, that he is to urge the adoption of it in the lake region. Special advantages claimed for the device are: Facility of removing and replacing bridge walls for inspection and when laying up; can be removed without destroying any part of the bridge, and all replaced without requiring any renewals; facility in cleaning fires, as no clinker ever adheres to the bridge wall; better combustion and greater economy of fuel and reduction of the emission of black smoke; and that it will not twist or warp and will last for years.

Of the line drawings design A shows the bridge as fitted in numerous passenger and freight steamers. Of course it is adapted also to land boilers (design B) and in these it need not be secured to the furnace in any way. The half-tone illustration is a back view of a Sturrock bridge taken after it had been in use for eighteen months in an English steamer, the Clematis. Mr. Hynd has a front view of this same bridge. Both show it unimpaired. The photographs have not been retouched or tampered with in any way. It is claimed that with ordinary attention the bridge will last for many years. In a letter still further describing the device Mr. Hynd says:

"The object of the Sturrock patent bridge wall is to provide at moderate cost a bridge wall which shall be indestructible, can be easily removed and replaced without sacrifice of the material comprising it, and which shall assist in the perfect combustion of the fuel in the furnace and also act as a smoke consumer. The bridge wall is composed of cast iron bars with suitable air openings between. The dead plate having openings through it, admits air freely from the ash pit to the back of the bars and through the spaces between to the fire. The bars are kept cool and will not burn or twist; no clinker ever adheres to them, and the usual pile of dead fire against the bridge wall is done away with. When in use the bars of the bridge wall are securely locked in place, but are provided with means for readily removing them when necessary. The whole bridge wall can thus be taken down to admit of examination of all parts of the furnace, and be as easily replaced without destroying any part of it, thus effecting a great saving in comparison with bridge walls of brick and fire clay, and doing away with all corrosion of the furnaces, which always takes place under the brick work. With this bridge wall shorter grate bars may be used, thus effecting a saving of from 15 to 20 per cent. in the cost of grate bars. Air openings are also provided through the bars at the crest of the bridge, by which heated air is admitted to mingle with the gases from the furnace, as they pass into the combustion chamber, thus effecting their complete combustion before passing out of the stack, and preventing smoke."

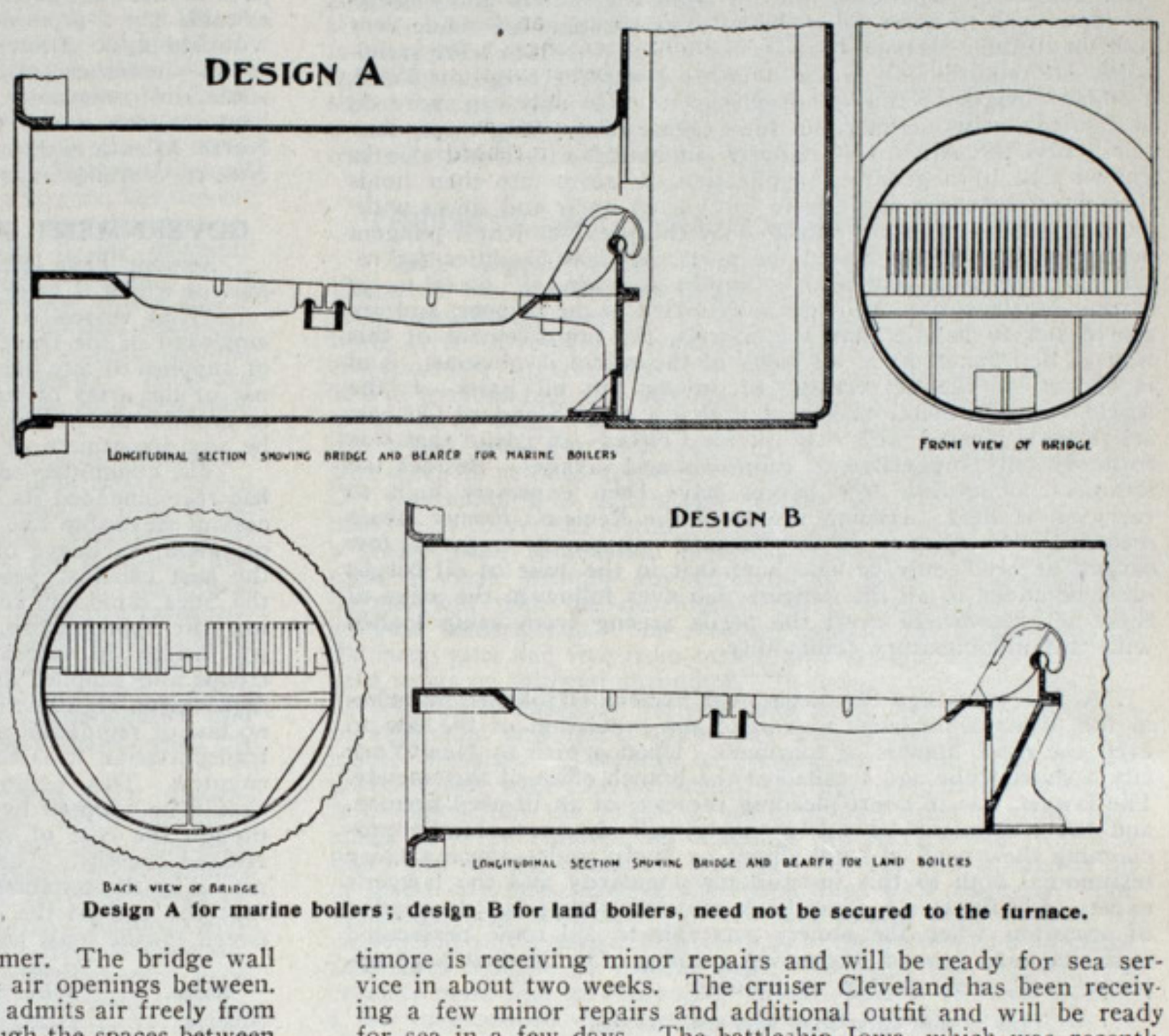


View of Sturrock bridge taken after it had been in use on an English steamer for eighteen months.

GENERAL SUMMARY OF SHIP BUILDING.

The next issue of the Review will be a special issue, elaborately illustrated and devoted to ship building. Special editions of trade journals are often gotten out without good reason for their publication. The Review once a year gets out a number of this kind. It is needed. Ships are not built in a day, and this number is therefore kept for reference.

Of the twenty or more vessels at the New York navy yard undergoing repairs only six are really seagoing warships. More than one-half are torpedo boats and tugboats. The cruiser Baltimore is receiving minor repairs and will be ready for sea service in about two weeks. The cruiser Cleveland has been receiving a few minor repairs and additional outfit and will be ready for sea in a few days. The battleship Iowa, which was recently put into commission, will be ready to go on sea service next week. The battleship Maine, which is receiving some repairs to her main engines, will be ready for sea duty in about three weeks. The battleship Indiana, which is to have new boilers at a cost of about $250,000, will not be ready for sea until June 1.



Design A for marine boilers; design B for land boilers, need not be secured to the furnace.

Senator Hale has introduced a bill in the senate authorizing the secretary of the navy to transfer to the secretary of the treasury upon his request, for national quarantine purposes, such dismantled vessels or hulks as are no longer required for naval purposes.

In an address a short time ago before the Rochester Chamber of Commerce, Mr. O. P. Austin, chief of the bureau of statistics, department of commerce and labor, said that the internal commerce of the United States during the last year, with a total estimated at $22,000,000,000, equaled that of the entire international commerce of the world during the same period. It was also shown by Mr. Austin that this country has trebled its internal commerce since 1870, while the international commerce of the world was only doubling and that the foreign commerce of the United States has also trebled, while that of the world was only doubling. In giving out these figures Mr. Austin had been discussing the Panama canal. He said that the country's next great undertaking—and it should come immediately after the Panama canal—should be a ship canal from the great lakes to tidewater.

Officers of Duluth harbor, No. 44, Masters and Pilots, for 1904 are: Captain, Robert Smith; first pilot, Roselle Coburn; second pilot, Ira Coburn; captain's clerk and purser, Clell D. Hibbard; chaplain, A. C. Mayo; delegate to grand harbor, F. R. Hill; delegate to advisory board, Benjamin F. Howard.

William Nevins, superintendent of the Buffalo Dry Dock Co., has tendered his resignation and Mr. O. T. Warren, who has been for the past two years superintendent of the West Bay City yard, has been appointed in his place.

FOR A STUDY OF SHIPPING PROBLEMS.

(From the New York Tribune.)

One of the objects dear to the heart of all patriotic Americans is the restoration of our merchant marine to the proud position in the commerce of the world that it held before the civil war. Many plans have been proposed to secure this, from the free admission of foreign built ships to American registry to the establishment of vast schemes for subsidy. It has so far, however, been impossible to secure an agreement of congress or of the public sentiment of the country on any measure of relief. When the Payne-Hanna bill failed to become a law in the last congress, after passing the senate at the beginning of the long session, little prospect remained of doing anything practical while the present differences of opinion among the real friends of shipping existed. There is need of a better understanding all around of the various elements of the problem. Accordingly, in his annual message, while strongly favoring encouragement of the merchant marine, President Roosevelt forebore to recommend any renewal of attempt at subsidy legislation, but suggested a commission to study the whole subject and make a report on the best means of increasing our shipping.

Following out that suggestion, Representative Gardner of Massachusetts has introduced a bill to create such a commission. This body is to consist of the secretary of the navy, the postmaster-general, the secretary of commerce and labor, the chairman of the senate committee on commerce and the house committee on merchant marine and fisheries, and three senators and three representatives. Two members of the commission from each house must be Democrats. For the necessary expenses of the commission a sum not exceeding $50,000 is appropriated, and it is empowered to send for persons and papers and make all needful investigations. Such a body would be in position to make a report to the next congress which would command the confidence of the country and be a foundation for sound and conservative legislation.

There can be no question about the worth of a merchant marine. The question is how to secure one. A plunge into large subsidy payments is not realized by many firm Republicans, and even if they are convinced that no other course meets the situation there is no agreement as to the best methods of subsidy. It is almost impossible for the impartial student to reach any solid basis of judgment on these points. The commission should furnish this and enable congress to take up the subject after the next election with a fair chance of reaching a satisfactory solution of the problem. Neither those who favor nor those who oppose subsidies have any reason to object to better information.

Francis B. Van Develde, who was years ago known as a builder of wooden vessels, died at his home in Cleveland, No. 26½ Geneva street, a few days ago.

BAD YEAR FOR BRITISH SHIPPING.

To show how disastrous is the present state of British shipping, Fairplay of London has compiled from the annual reports of thirty-six cargo boat companies an interesting statement of earnings. The companies included in the list own 245 vessels, aggregating 731,019 tons gross, which stand on the companies' books at a present valuation of £7,283,955. The companies have a paid-up capital of £4,681,541 and stated debts amounting to £2,137,313, or together £6,818,854. During the past twelve months these companies have earned from voyages only £276,784, and have, in addition to paying interest on debentures, fees, income tax, etc., paid away £165,312 in dividends or 3.53 per cent. on the paid-up capital, and have transferred £130,241, or 1.78 per cent. on the book value of the steamers to depreciation, these two items alone amounting to more than the year's earnings from voyages. If, however, 5 per cent. on the original cost, or 6 per cent on the written-down value of the steamers had been taken off for depreciation for the past year, £417,196 would have been absorbed, or £140,412 more than the year's earnings. If to this £140,412 of loss were added the interest on the prior charges, which would certainly exceed £100,000, the loss on the year's working of these representative vessels would amount to a quarter of a million, or 5.34 per cent. on the paid-up capital; and this leaves some of the management charges, office expenses, etc., which amount to a considerable sum, out of account. The depreciation does not include the considerable decline in the market value of new vessels during the past few years, cargo boats contracted for about three or four years ago having depreciated in value, with regard to wear and tear, at least 25 per cent. For instance, one of the companies has steamers which three years ago cost about £52,500 each to build; similar vessels could now be secured off the stocks at about £34,500 or 34 per cent. less, and for this fall in the market value no provision has been made. If the 245 vessels were brought down on the companies' books to their present market value, the amount to be written off would be found to be enormous. Out of the thirty-six companies eleven paid no dividends for the past year and fifteen set aside nothing for depreciation.

"We have never had a better winter than this one in our school," says Lieut. W. J. Wilson of the Chicago Nautical School, Masonic Temple. "We are enrolling men every day and the work of the school is in all respects far more satisfactory than it has ever been to us. Harold Davidson, son of Capt. James Davidson of West Bay City, enrolled with us a few days ago."

Work has been resumed at the Crescent Ship Yard, Elizabethport, N. J. Mr. Charles M. Schwab made it possible to resume work on the excursion steamer Happy Day by settling all claims against it. Charles S. Bryan has also settled claims against the yacht Czarina.

BELLEVILLE WATER-TUBE BOILERS

NOW IN USE (SEPTEMBER, 1903)

On Board Sea-going Vessels, NOT INCLUDING New Installations Building or Erecting.

French Navy	355,560	H. P.
English Royal Navy	929,300	"
Russian Imperial Navy	227,500	"
Japanese Imperial Navy	122,700	"
Austrian Imperial Navy	56,700	"
Italian Royal Navy	13,500	"
Chilian Navy	26,500	"
Argentine Navy	13,000	"
The "Messageries Maritimes" Company	87,600	"
Chemins de fer de l'Ouest: (The French Western Railway Co.) Steamships plying between Dieppe and Newhaven	18,500	"
Total Horse Power of Boilers in Use	1,850,860	

Societé Anonyme des Etablissements Delaunay Belleville

CAPITAL: 6,000,000 FRANCS

Works and Dock Yards of the Ermitage at Saint-Denis (Seine), France. Telegraphic Address: Belleville, Saint-Denis Sur-Seine

BANK SUPERINTENDENT'S DRASTIC COMMENT.

Drastic comment upon the conduct of the Trust Company of the Republic in connection with the affairs of the United States Ship Building Co. is a feature of the annual report of Supt. Frederick D. Kilburn of the New York state bank department recently filed at Albany.

"Upon the first intimation that the trust company had made unusual commitments in the case," says Mr. Kilburn, "a special inquiry was instituted by me to ascertain the facts, and I was amazed to find that undertakings had been entered into and liabilities incurred which not only jeopardized the solvency of the trust company but flagrantly transgressed the law. The company had made numerous loans without collateral other than ship building stock and securities, one of them to Mr. Dresser, the president of the company, and to Mr. Nixon for nearly a million and three-quarters of dollars. It had, besides, guaranteed loans made by other institutions to Mr. Dresser and Mr. Nixon amounting to $2,000,000. I required, under the alternative, that the company be referred at once to the attorney-general for proceedings in insolvency to be instituted against it, that there be some very thorough straightening out of the trust company's affairs. The direct loan to Mr. Dresser and to Mr. Nixon was excessive under the law, regardless of Mr. Dresser's official relation to the company, and to him it was more than ten times the amount that could lawfully be loaned.

"Under my insistence a half million of it was soon repaid, the loans for two millions guaranteed to other institutions were taken up, and later the balance of the Dresser and Nixon note to the Trust Company of the Republic was paid in full. This seemed to me a far better proceeding than to refer the company to the attorney-general summarily, for it recovered nearly $4,000,000 that in the other alternative might have proved a loss. Moreover, one plan for reorganizing the ship building trust would have involved a loss of $600,000 to the trust company if carried through, which, however, was objected to and finally abandoned.

"It was impossible, however, to avert all of the consequences of the ill-judged and reckless commitments in which the company had become involved, and it preserved its solvency only by cutting its capital in two. Its losses on account of investments in the ship building folly and from loans upon ship building collateral aggregated nearly $900,000 and with other minor losses and depreciation in investments wiped out the company's entire surplus, and necessitated the sacrifice by stockholders of one-half of their holdings. Over a million dollars was charged to profit and loss. I note that Mr. Dresser attempted in the ship building inquiry to justify or excuse his borrowings from the Trust Company of the Republic by charging that such transactions are common, or at least not uncommon, in other institutions. The information at my command regarding such alleged practices warrants absolute contradiction of Mr. Dresser on this point. Twice in each year every trust company is required to submit a verified report of its condition to this department, and one item in such report covers the amount of loans, directly or indirectly, to directors. It is extremely unusual for these reports to disclose any unlawful loan of the character under consideration. Besides this check, every examiner of the department is under special instructions to report particularly whether he finds in an examination loans by a trust company to its directors, and if found, the amount thereof. These examinations are far from confirming Mr. Dresser's representation; on the contrary, they refute it."

SHIPPING TRADE OF DENMARK.

The Copenhagen statistical bureau has just published a report on the maritime trade and merchant navy of Denmark for the year 1902 from which it appears that the total number of vessels under the Danish flag last year was 3,905 of all categories and of not less than 4 tons register—the total measurement being 431,728 registered tons. Of this number, 3,352 were sailers and 553 steamers, the tonnage of the latter being 273,000, and their engines developing in the aggregate 55,385 H. P. All the steamers, with very few exceptions, are built of either iron or steel; they have been steadily increasing in both number and dimensions during the last five years, the number being sixty-six more than five years ago, and their measurement 89,700 tons greater. The sailing fleet, however, has been slowly but constantly decreasing in tonnage, the loss in this respect being nearly 12 per cent. in the five years, although the number of ships is greater. The total value of the merchant navy is estimated at 110,000,000 kroner, or $25,000,000.

With respect to the maritime movement in Danish ports the entries of foreign vessels last year totalled up to 33,007, the aggregate tonnage measurement being 5,978,000 registered tons—16,366 of the entries were sailing-ships and 16,641 steamers. The departures were altogether 33,179, with about the same proportion between the sailers and steamers. About two-fifths of the shipping trade of Denmark, according to the statistics, is carried on with British ports; Sweden follows with about a sixth, then Germany, Russia, and the United States, in the order named. The report adds that more than 50 per cent. of the oversea traffic with Danish ports inward, and about two-thirds of the outward traffic, is effected by foreign vessels, but that last year great progress, not only relative but absolute, was made in the proportionate share of the national flag in this traffic. The competition in the carrying trade between Denmark and other European countries is maintained principally by British steamers and Swedish sailing-ships. The coasting trade, however, is reserved for the national flag, and considering the large number of islands included in the kingdom, and the many cities and towns situated on those islands, this trade is a very important one.

Lake Tug for Sale or Charter.

Tug Kate Williams. Length 113 ft, beam 21 ft, S. C engine 22 and 40 x 30 in. Fire box boiler 8 x 7 ft. Rated A 1½. Entirely rebuilt in 1901. Good condition. Lake Shore Stone Co., 97 Wisconsin St., Milwaukee, Wis. Feb. 11

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Send for 1902 Catalogue M. A. R. FREE.

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A Guarantee of Quality.

Open Hearth Steel Castings of the Highest Grade for Locomotive, General Machinery and Shipbuilding Work.

Subject to U. S. Government, Lloyds, Railroad and Other Highest Requirements.

Seaboard Steel Casting Co.,
Chester, Pa.

STAGES OF WATER.

Gage records of the United States lake survey show the following mean stages of water above mean sea level for December, 1903:

	Stages during Dec.	Higher than during same month last year.	Lower	Higher than during Dec. 1895.
	ft.	ft.	ft.	ft.
Lake Superior	602.37	0.25	....	0.41
Lake Michigan	579.49	0.02	....	0.90
Lake Huron	579.64	0.19	....	1.06
Lake Erie	571.40	....	0.51	0.45
Lake Ontario	245.15	0.12	....	1.41

The present fall Lake Huron to Lake Erie is .70 ft. less than a year ago.

GATHERING OF OLD CAPTAINS.

Editor Marine Review:—I note in your report of the dinner to old captains given by the Upson-Walton Co. that Capt. Wm. G. Jones says it was on Dec. 12, 1865, that the steamer John A. Dix left Marquette with the two barges that were lost at Whitefish point, Lake Superior. I think the captain is mistaken in his dates, as I am quite sure the steamer Dix was not afloat at that time. While I cannot recall the year positively, I am sure it was not in the sixties. I think it was in 1872 or 1873. I was master of the old propeller Mineral Rock at that time and left Marquette the same day the Dix left, but went under Grand island for shelter; in fact laid up at Grand island for the winter, as after the Dix disaster, we got word that the Sault river was blocked with ice. This was the same fall in which the steamer China returned to Marquette with the crews of many ships frozen in at the "Soo." In this same year also the railroad was opened up between Green Bay and Marinette, Wis., as we all staged it from Escanaba to Marinette and there got the train.

J. W. WESTCOTT.

Detroit, Jan. 12, 1903.

The war department has accepted the bid of Funch, Edye & Co. of New York for carrying government freight between New York and Manila for the six months ending July 1, 1904, at $6.15 per ton, fifteen sailings being guaranteed between Jan. 1 and July 1. The Pacific Mail Steamship Co. and the Great Northern Steamship Co. have bid for carrying passengers but no award has yet been made.

On the Clyde, the world's center of ship building, there are about fifty yards, the majority of which construct engines as well as hulls. In addition, there are a score of marine engine concerns who do not build ships. In a busy year these establishments employ about 40,000 men, and at present (apart from seasonal changes and weather causes) fully 30 per cent. of this total are unemployed.

TRADE NOTES.

Wilson & Silsby, sailmakers, Rowe's wharf, Boston, Mass., have just issued a neat little calendar, the illustration upon which is a photogravure of the auxiliary schooner yacht Adriadne under full sail.

The Power & Mining Machinery Co., 52-54 William street, New York, formerly the Loomis-Pettibone Gas Machinery Co., has just issued a very beautiful catalogue devoted to gas engines. They have the American right for the Crossley gas engines. They are very popular in Britain, more than 52,000 of them having been built in Manchester alone. The catalogue contains a very complete description of the engines, both from letter press and drawing standpoint.

Mr. N. S. Braden, formerly manager of the Westinghouse Electric & Manufacturing Co.'s district office at Cleveland, has been appointed sales manager of the new Canadian Westinghouse Co. and assumed the duties of that office Jan. 1. Mr. Braden succeeds the late Thomas C. Frenyear, who died in December last. Mr. Frenyear's office was at Toronto, but Mr. Braden will make his headquarters at Hamilton, Ont. Mr. Braden has been connected with the Cleveland district sales office since 1899. He is known as one of the ablest and best-informed electrical salesmen in America.

One of the features of the new plant of the B. F. Sturtevant Co. at Hyde Park, Mass., peculiarly indicative of the permanent character of the new works now under construction, is the steam tunnel 4½ ft. in width and 6½ ft. high, extending from the power plant to the most remote part of the manufacturing buildings, a total distance of about 800 ft. This tunnel, which is of concrete construction, will not only accommodate all of the steam piping, but also the electric wires for power, light, telephone, standard time clock, and other service, together with oil, hot water and other pipes for general distribution to the various buildings of the plant. None of these features of the equipment will be carried above ground at any outdoor point. While the expense of such an installation is necessarily large, the convenience of access for changes and repairs will in the future much more than offset any fixed charges thereon.

A so-called steam schooner, the James S. Higgins, built of wood and costing about $60,000, was launched a few days ago from the Lindstrom ship yard at Aberdeen, Wash. The vessel is for C. H. Higgins of San Francisco. She is 146 ft. long, 34 ft. beam and 10½ ft. depth of hold and is expected to carry about 400,000 ft. of lumber.

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U. S. ENGINEER OFFICE, Vicksburg, Miss., Dec. 22, 1903. Sealed proposals for building Locks and Dams Nos. 4 and 6, Ouachita River, Ark. and La., will be received here until 11 a. m., Jan. 2, 1904, and then publicly opened. Information furnished on application. CHAS. S. BROMWELL, Capt., Engrs. Jan. 14

U. S. ENGINEER OFFICE, Jones building, Detroit, Mich., January 5, 1904. Sealed proposals for removing boulders, excavating limestone bed rock, and dredging in lower Detroit River, will be received here until 2 p. m. (standard time) February 25, 1904, and then publicly opened. Information furnished on application. W. H. BIXBY, Major, Eng'rs. Feb. 18

U.S. ENGINEER OFFICE, Duluth, Minn., Jan 2, 1904.—Sealed proposals for furnishing 4,300 barrels Portland cement for concrete superstructure to breakwater at Marquette, Mich., will be received here until noon, Feb 2, 1904, and then publicly opened. Information on application. CHAS. L. POTTER, Capt., Engrs. Jan 28

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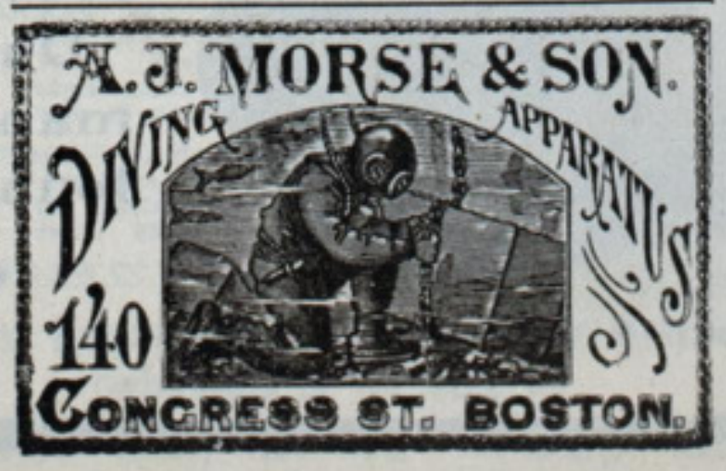

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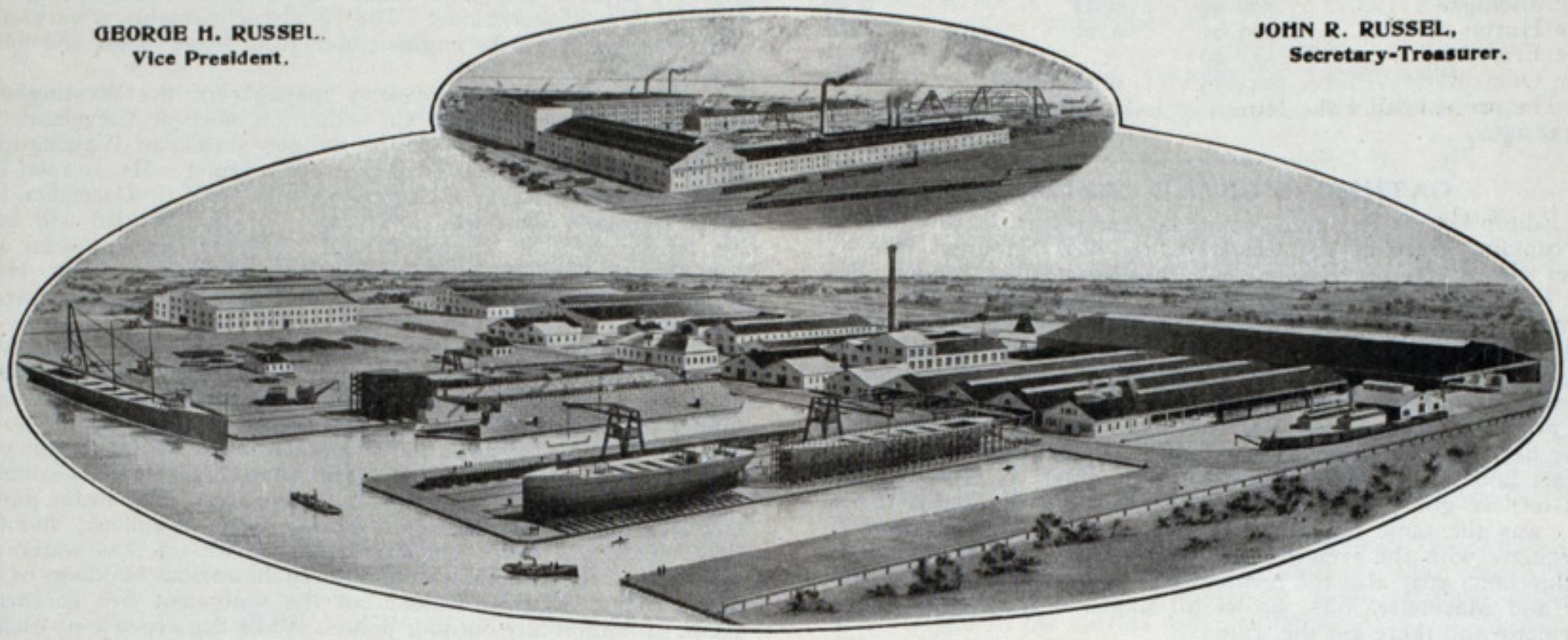

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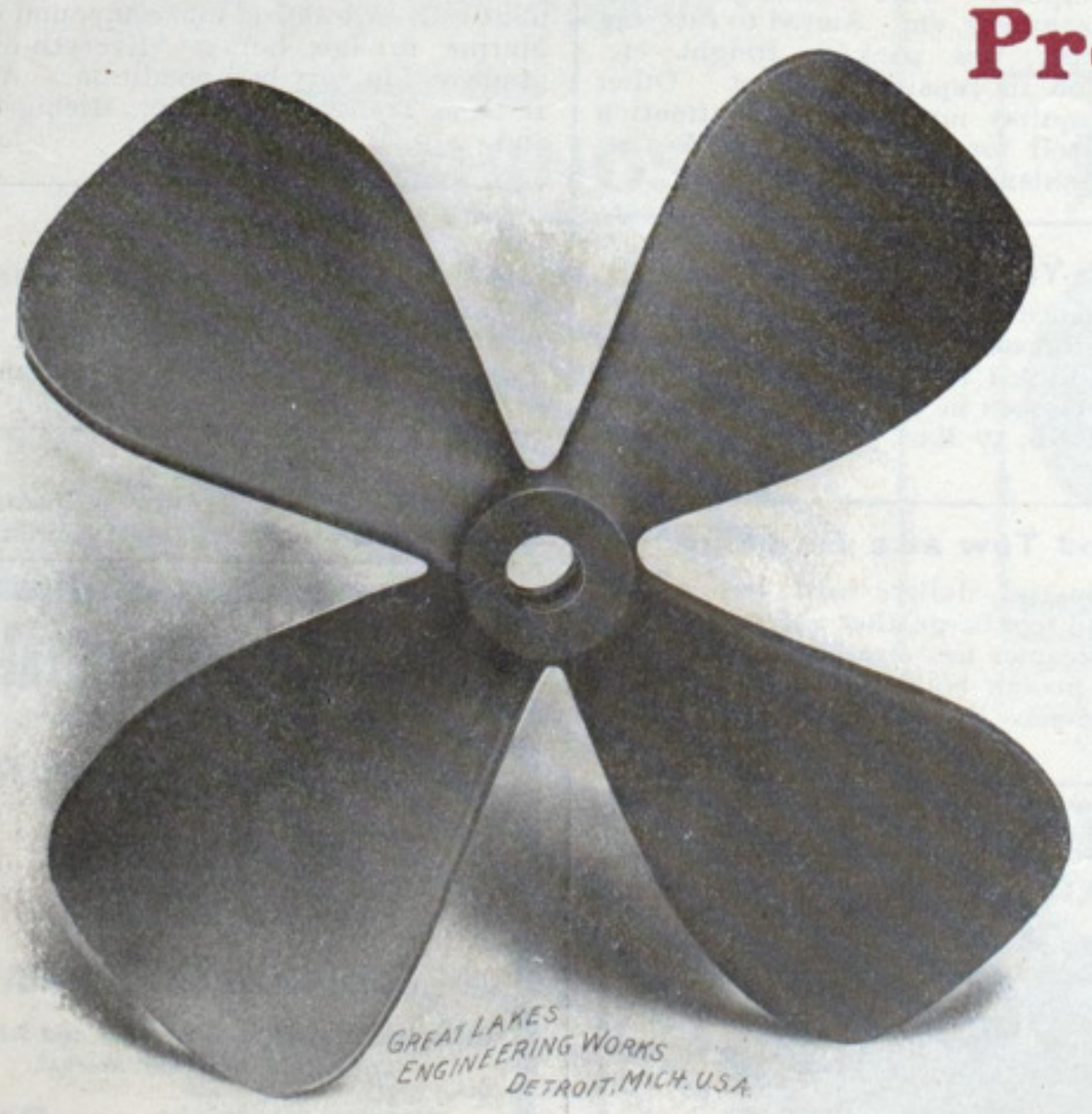

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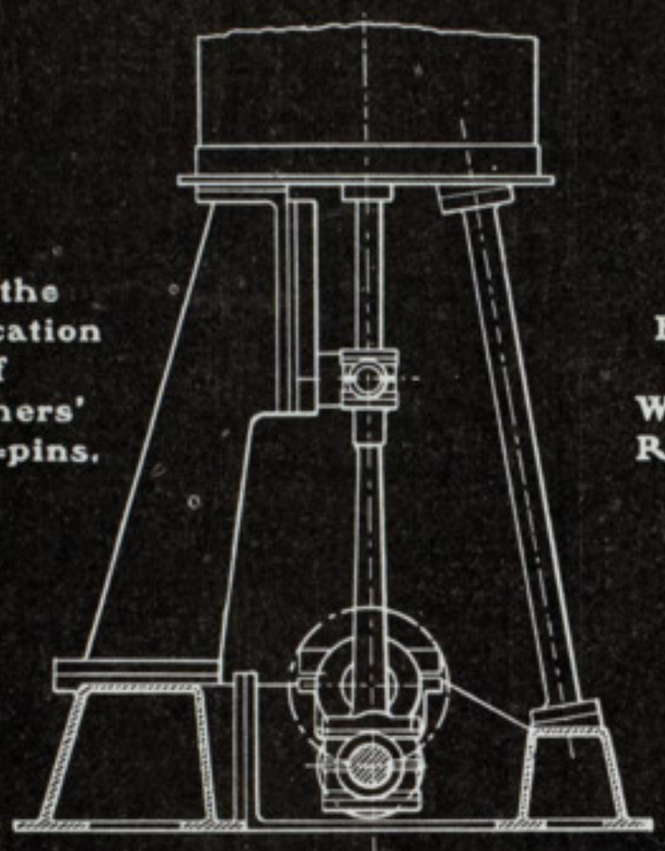

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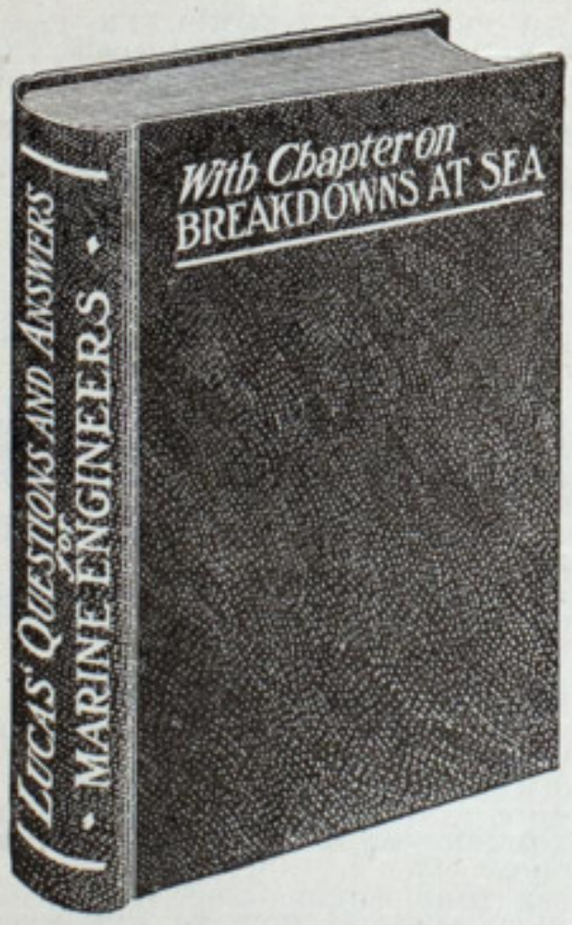

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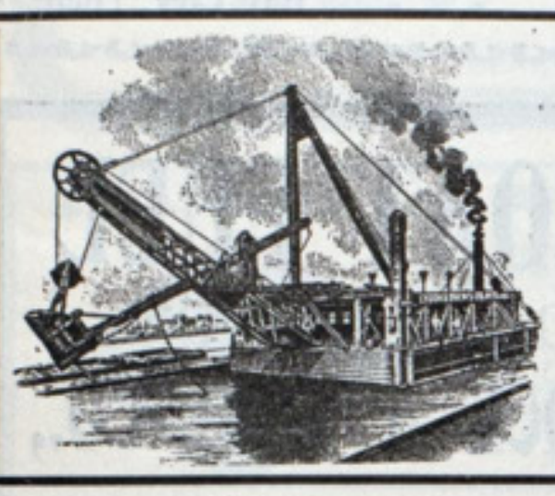

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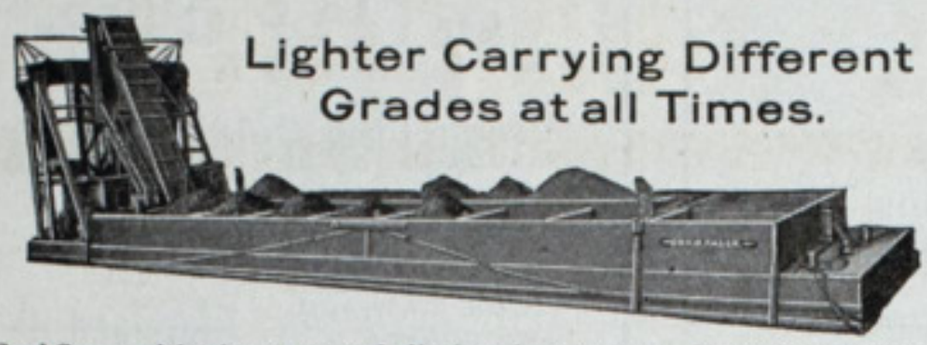

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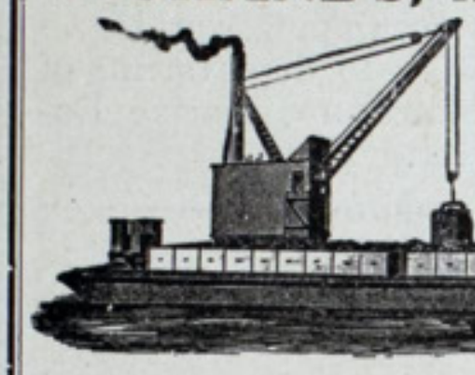

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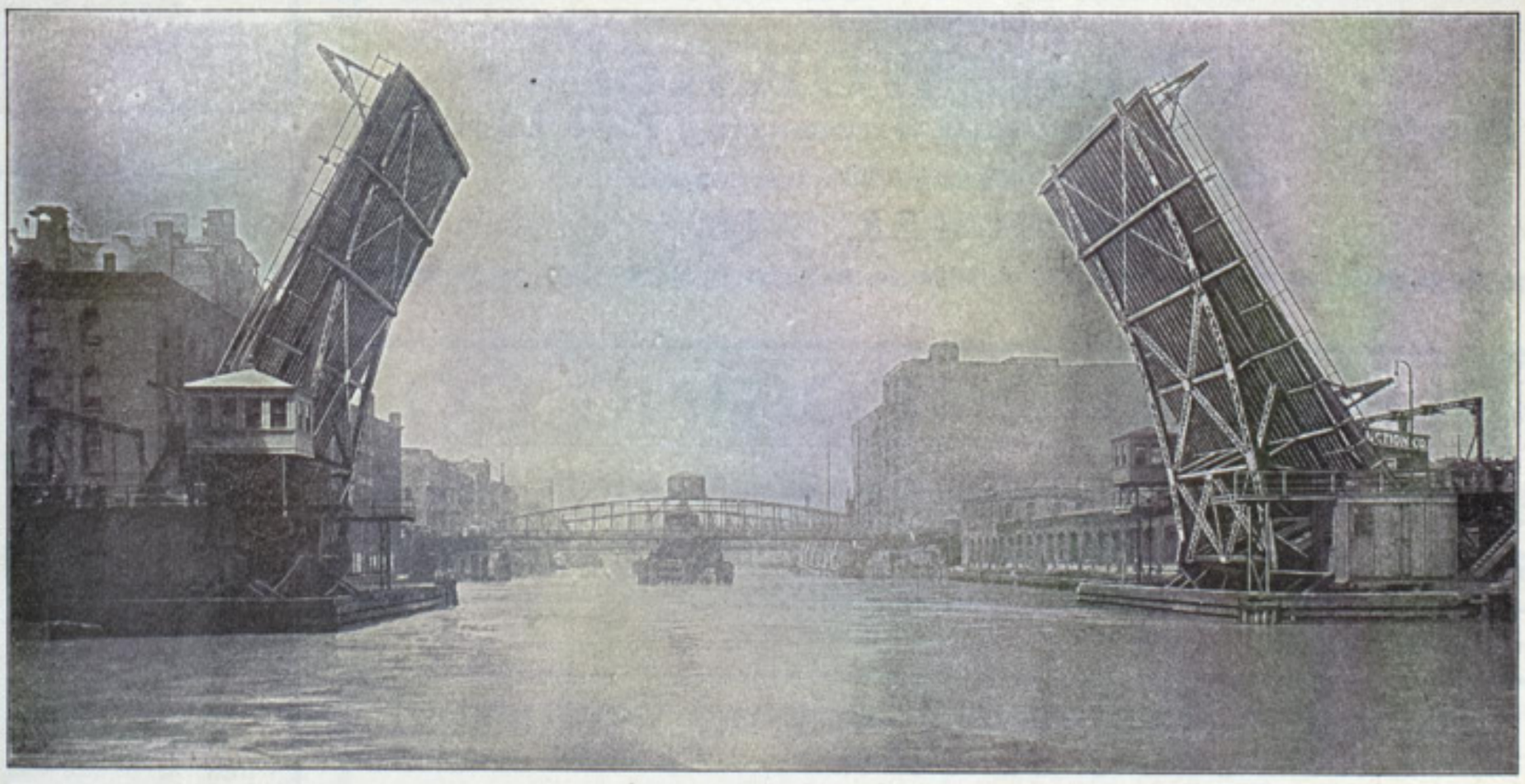

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.....Mariner's Harbor, S. I., N. Y.
Truscott Boat Mfg. Co.....St. Joseph, Mich.
Willard, Chas. P. & Co.....Chicago.

BOILER MANUFACTURERS.

Almy Water Tube Boiler Co.....Providence, R. I.
American Ship Building Co.....Cleveland
Atlantic Works.....East Boston, Mass.
Babcock & Wilcox Co.....New York.
Chicago Ship Building Co.....Chicago.
Cramp, Wm. & Sons.....Philadelphia.
Delauney Belleville & Co.....St. Denis, France.
Detroit Ship Building Co.....Detroit.
Fletcher, W. & A. Co.....Hoboken, N. J.
Fore River Ship & Engine Co.....Quincy, Mass.
Forest City Boiler Co.....Cleveland
Great Lakes Engineering Works .... Detroit
Jenks Ship Building Co.....Port Huron, Mich.
Kingsford Foundry & Machine Works Oswego, N. Y.
Maryland Steel Co.....Sparrow's Point, Md
Milwaukee Dry Dock Co.....Milwaukee
Mosher Water-Tube Boiler Co .....New York.
Newport News Ship Building Co Newport News, Va.
Northwestern Steam Boiler & Mfg. Co., Duluth, Minn
Risdon Iron Works.....San Francisco.
Roberts Safety Water Tube Boiler Co..New York.
Stirling, The Co.....Chicago.
Superior Ship Building Co.....Superior, Wis.
Taylor Water Tube Boiler Co.....Detroit.
Union Machine & Boiler Co.....Cleveland.
United States Ship Building Co.....New York.
Willard, Chas. P. & Co.....Chicago.

BOILER COMPOUNDS.

Dearborn Drug & Chemical Works.....Chicago.

BOILER RIVETS.

Bourne-Fuller Co. .....Cleveland.

BOILER STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

BOOKS, NAUTICAL AND ENGINEERING.

Audel & Co., Theo.....New York.
Marine Review Pub. Co.....Cleveland.

BRASS AND BRONZE CASTINGS.

Cramp, Wm. & Sons.....Philadelphia.
Fore River Ship & Engine Co.....Quincy, Mass.
Great Lakes Engineering Works .....Detroit.
Lunkenheimer Co.....Cincinnati.
Macbeth Iron Co.....Cleveland.
Phosphor Bronze Smelting Co.....Philadelphia.

BRIDGES, BUILDERS OF

Scherzer Rolling Lift Bridge Co.....Chicago.

BUCKETS, ORE AND COAL.

Bartlett & Snow Co., C. O. .....Cleveland.
Brown Hoisting & Conveying Machine Co. Cleveland.

CABIN AND CABINET FINISHING WOODS.

Martin-Barriss Co. .....Cleveland.

CAPSTANS.

American Ship Windlass Co.....Providence, R. I.
Hyde Windlass Co. .....Bath, Me.

CARPETS, FURNITURE, BEDS, ETC.

Siegel Cooper Co .....New York.

CEMENT.

Shepard, J. J.....Cleveland

CEMENT, IRON FOR REPAIRING LEAKS.

Smooth-On Mfg. Co. .....Jersey City, N. J.

CHAINS.

Lebanon Chain Works.....Lebanon, Pa
Standard Chain Co. .....Pittsburg.

CHAIN HOISTS.

Boston & Lockport Block Co. .....Boston, Mass.
Dake Engine Co. .....Grand Haven, Mich.

CHARTS.

Marine Review Pub. Co. .....Cleveland.
Potter, J. D.....London.

CIRCULATOR, EQUILIBRIUM.

With Steam Heating Attachment.
Bloomsburg & Co., H. .....Baltimore, Md.

CLOCKS (Marine and Ship's Bell) AND CHRONOMETERS.

Ashton Valve Co.....Boston.
Bliss, John & Co.....New York.
Chelsea Clock Co.....Boston.
Ritchie, E. S. & Sons.....Brookline, Mass.

COAL PRODUCERS AND SHIPPERS.

Hanna, M. A. & Co.....Cleveland.
Pickands, Mather & Co.....Cleveland.
Pittsburg Coal Co.....Cleveland.
Rochester & Pittsburg Coal & Iron Co.....Buffalo.

COAL AND ORE HANDLING MACHINERY.

Bartlett & Snow Co., C. O. .....Cleveland.
Brown Hoisting Machinery Co., (Inc.)....Cleveland.
Lidgerwood Mfg. Co.....New York.

COMPASSES.

Bliss, John & Co.....New York.
Ritchie, E. S. & Sons.....Brookline, Mass.

COMPASS ADJUSTER.

Smith, Capt. W. J. .....Seattle, Wash.
McNevin, Alfred D'A. .....Detroit.

CONDENSERS.

Thropp & Sons Co., John E. .....Trenton, N. J.

CONTRACTORS FOR PUBLIC WORKS.

Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co...Chicago.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co .....Chicago.
Lake Erie Dredging Co.....Buffalo.
Smith Co., L. P. & J. A. .....Cleveland.
Starke Dredge & Dock Co., C. H.....Milwaukee

COPPER, TIN AND SHEET IRON WORK.

McCutcheon, C. H.....Buffalo.

CORDAGE

Baker & Co., H. H.....Buffalo.
DeGrauw, Aymar & Co.....New York.
Upson-Walton Co.....Cleveland.

CORK JACKETS AND RINGS.

Armstrong Cork Co.....Pittsburg Pa.
Kahnweiler's Sons, D.....New York.
Lane & DeGroot .....Long Island City, N. Y.

CHAIN CONVEYORS, HOISTS.

Bartlett & Snow Co., C. O. .....Cleveland.
Brown Hoisting Machinery Co., (Inc.)....Cleveland.
General Electric Co.....Schenectady, N. Y.
Lidgerwood Mfg. Co.....New York.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

CRANES, TRAVELING.

Bartlett & Snow Co, C. O. .....Cleveland
Brown Hoisting Machinery Co.....Cleveland
Lidgerwood Mfg Co. .....New York
Pawling & Harnischfeger.....Milwaukee

DISTANCE FINDER.

Nicholson Ship Log Co.....Cleveland, O.

DIVING APPARATUS.

Morse, A. J. & Son.....Boston.
Schrader's Son, A.....New York.

DREDGING CONTRACTORS.

Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co...Chicago.
Dunbar & Sullivan Dredging Co .....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Lake Erie Dredging Co.....Buffalo.
Smith Co., L. P. & J. A. .....Cleveland.
Starke Dredge & Dock Co., C. H.....Milwaukee.

DRYING APPARATUS.

Sturtevant, B. F. Co.....Boston.

DRY DOCKS.

American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Buffalo Dry Dock Co.....Buffalo.
Chicago Ship Building Co.....Chicago.
Craig Ship Building Co.....Toledo, O.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works .... Detroit.
Lockwood Mfg. Co.....East Boston, Mass.
Manitowoc Dry Dock Co.....Manitowoc, Wis.
Maryland Steel Co.....Sparrow's Point, Md.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co Newport News, Va.
Shipowners Dry Dock Co.....Chicago.
Superior Ship Building Co.....Superior, Wis.
United States Ship Building Co.....New York.

ELECTRIC HOISTS AND CRANES.

Elwell-Parker Electric Co.....Cleveland.
General Electric Co.....Schenectady, N. Y.
Lidgerwood Mfg. Co.....New York.
Pawling & Harnischfeger .....Milwaukee
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

ELECTRIC LIGHT AND POWER PLANTS.

Elwell-Parker Electric Co.....Cleveland.
General Electric Co.....Schenectady, N. Y.
Sturtevant, B. F. Co.....Boston
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

ENGINE BUILDERS, MARINE.

American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Chicago Ship Building Co.....Chicago.
Chase Machine Co.....Cleveland.
Craig Ship Building Co.....Toledo, O.
Cramp, Wm. & Sons.....Philadelphia.
Dake Engine Co. .....Grand Haven, Mich.
Detroit Ship Building Co.....Detroit
Fletcher, W. & A. Co.....Hoboken, N. J.
Fore River Ship & Engine Co.....Quincy, Mass.
Great Lakes Engineering Works.....Detroit, Mich.
Hall Bros. .....Philadelphia.
Jenks Ship Building Co.....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
Maryland Steel Co.....Sparrow's Point, Md.
Milwaukee Dry Dock Co.....Milwaukee.
Mosher, Chas. D.....New York.
Moulton Steering Engine Co.....New York.
Newport News Ship Building Co Newport News, Va.

BUYERS' DIRECTORY OF THE MARINE TRADE.—Continued.

ENGINE BUILDERS, MARINE.—Continued.

Northwestern Steam Boiler & Mfg Co., Duluth, Minn.
Risdon Iron Works.....San Francisco.
Roach's Ship Yard.....Chester, Pa.
Sheriffs Mfg. Co.....Milwaukee.
Superior Ship Building Co.....Superior, Wis.
Thropp, J. E. & Sons Co.....Trenton, N. J.
Trout, H. G. .....Buffalo.
United States Ship Building Co.....New York.
Willard, Chas. P. & Co.....Chicago.

ENGINE ROOM TELEGRAPH, CALL BELLS, ETC.

Cory, Chas. & Son.....New York.
MacLean Hydraulic Signal Co.....Chicago.

ENGINEERING SPECIALTIES AND SUPPLIES.

Crane Co. .....Chicago.
Kieley & Mueller.....New York.
Lunkenheimer Co.....Cincinnati.
McCutcheon, C. H. .....Buffalo.
Mooers & Co., H ..... Milwaukee
New York Belting & Packing Co.....New York.
Northwestern Steam Boiler & Mfg. Co., Duluth, Minn.
Reilly Repair & Supply Co., James....New York.

ENGINEERS, MARINE, MECHANICAL, CONSULTING.

Hynd, Alexander.....Cleveland.
Hunt, Robt. W. & Co.....Chicago.
Kidd, Joseph .....Duluth, Minn.
Lovejoy, H. O ..... Buffalo.
Matteson & Drake.... ..... Philadelphia.
Moffat & Son.... .....San Francisco
Mosher, Chas. D.....New York.
Nacey, James .....Cleveland.
Newman & Merryweather.....New York
Pittsburg Testing Laboratory, Ltd.....Pittsburg.
Powell, Ambrose V.....Chicago.
Rice, Henry .....Buffalo.
Roelker, H. B. .....New York.
Sadler, Perkins & Field .....New York.
Steel, Adam..... ..... Cleveland.
Wood, W. J. .....Chicago.

EVAPORATING AND DISTILLING APPARATUS.

Reilly Repair & Supply Co., James....New York.

FANS FOR VENTILATION, EXHAUST, ETC.

Sturtevant, B. F. Co.....Boston.

FEED WATER PURIFIERS AND HEATERS.

Learmonth, Robert.....Buffalo.
Reilly Repair & Supply Co., James....New York.
Ross Valve Co.....Troy, N. Y.

FIRE BRICK.

Shepard, J. J..... Cleveland

FIRE CLAY.

Shepard, J. J..... Cleveland

FIXTURES FOR LAMPS, OIL OR ELECTRIC.

General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

FORGES.

Sturtevant, B. F. Co.....Boston.

FORGINGS FOR CRANK, PROPELLER OR THRUST SHAFTS, ETC.

Cleveland City Forge & Iron Co.....Cleveland.
Fore River Ship & Engine Co.....Quincy, Mass
Macbeth Iron Co.....Cleveland.

FLUE WELDING.

Fix's, S. Sons .....Cleveland.

FURNACES FOR BOILERS.

Continental Iron Works.....New York.

FUELING COMPANIES AND COAL DEALERS.

Hanna, M. A. & Co.....Cleveland.
Ironville Dock & Coal Co..... Toledo, O.
Pickands, Mather & Co.....Cleveland.
Pittsburg Coal Co.....Cleveland.
Rochester & Pittsburg Coal & Iron Co.....Buffalo.
Smith, Stanley B. & Co.....Detroit.
Smith Coal & Dock Co., Stanley B.....Toledo, O.
Youghiogheny & Lehigh Valley Coal Co....Chicago.

GALLEY UTENSILS.

Siegel Cooper Co ....New York.

GASKETS, RUBBER.

New York Belting & Packing Co.....New York.

GAS BUOYS.

Safety Car Heating & Lighting Co.....New York

GAS AND GASOLINE ENGINES.

Chase Machine Co.....Cleveland.

GAUGES, STEAM AND VACUUM.

American Steam Gauge Co.....Boston.
Ashton Valve Co.....Boston.
Lunkenheimer Co.....Cincinnati.

GRAPHITE.

Dixon Crucible Co., Joseph.....Jersey City, N. J.

GROCERIES AND SUPPLIES.

Siegel Cooper Co..... New York.

HATCH FASTENERS.

Mulholland, Capt. M.,.....Cleveland.

HAMMERS, STEAM.

Chase Machine Co.....Cleveland.

HEATING APPARATUS.

Sturtevant, B. F. Co.....Boston.

HOISTS FOR CARGO, ETC.

American Ship Building Co.....Cleveland.
Brown Hoisting Machinery Co., (Inc.)....Cleveland.
Chase Machine Co.....Cleveland.
Elwell-Parker Electric Co.....Cleveland.
General Electric Co. .....New York.
Hyde Windlass Co.....Bath, Me.
Lidgerwood Mfg. Co.....New York.
Marine Iron Co.....Bay City.
Pawling & Harnischfeger.....Milwaukee
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

HOLLOW STAYBOLT IRON.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

HOSE, RUBBER.

New York Belting & Packing Co.....New York.

HYDRAULIC DREDGES.

Great Lakes Engineering Works.....Detroit.

HYDRAULIC TOOLS.

Watson-Stillman Co., The.....New York.

ICE MACHINERY.

Roelker, H. B. .....New York.

INDICATORS FOR STEAM ENGINES.

American Steam Gauge Co.....Boston.
Ashton Valve Co.....Boston.

INJECTORS.

American Injector Co.....Detroit.
Crane Co.....Chicago.
Jenkins Bros. .....New York.
Lunkenheimer Co.....Cincinnati.
Penberthy Injector Co. .....Detroit, Mich.

INSURANCE, MARINE.

Brown & Co. .....Buffalo.
Elphicke, C. W. & Co.....Chicago.
Fleming & Co., P. H .....Chicago.
Frankfort Marine, A. & P. G. Ins. Co..... New York
Gilchrist & Co., C. P.....Cleveland
Hawgood & Co., W. A. .....Cleveland.
Helm & Co., D. T. .....Duluth.
Hutchinson & Co. .....Cleveland.
McCarthy, T. R. .....Montreal.
McCurdy, Geo. L. .....Chicago.
Mitchell & Co. .....Cleveland.
Moffat & Son ..... San Francisco.
Peck, Chas. E. & W. F. ..New York and Chicago.
Prindiville & Co ..... Chicago.
Richardson, W. C. ..... Cleveland.
Sullivan, D. & Co..... Chicago.
Voss, F. D ..... New York
Weeks, F. H. ..... New York.

IRON ORE AND PIG IRON.

Bourne-Fuller Co. .....Cleveland.
Hanna, M. A. & Co.....Cleveland.
Pickands, Mather & Co.....Cleveland.

LAUNCHES—STEAM, NAPHTHA, ELECTRIC.

Marine Construction & D. D. Co.....
.....Mariner's Harbor, S. I., N. Y.
Truscott Boat Mfg. Co.....St. Joseph Mich.
Willard, Chas. P. .....Chicago.

LIFE FLOATS.

Carley Life Float Co. .....New York.

LIFE PRESERVERS, LIFE BOATS, BUOYS.

Armstrong Cork Co. .....Pittsburg.
Carley Life Float Co..... New York
Drein, Thos. & Son .....Wilmington, Del.
Kahnweiler's Sons, D. .....New York.
Lane & DeGroot .....Long Island City, N. Y.
Marine Construction & Dry Dock Co.....
.....Mariner's Harbor, S. I., N. Y.

LIGHTS, SIDE AND SIGNAL.

Russell & Watson .....Buffalo.

LOGS.

Bliss, John & Co..... New York.
Nicholson Ship Log Co. .....Cleveland.
Walker & Sons, Thomas .....Birmingham, Eng.
Also Ship Chandlers.

LUBRICATING GRAPHITE.

Dixon Crucible Co., Joseph..... Jersey City, N. J.

LUBRICATORS.

Crane Co .....Chicago.
Lunkenheimer Co .. ..Cincinnatti.

LUMBER.

Martin-Barriss Co. .....Cleveland.
Shurick, F. S. .....New York.

MACHINISTS.

Chase Machine Co.....Cleveland.
Lockwood Mfg Co .....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
Mooers & Co., H .....Milwaukee
Union Machine & Boiler Co. .....Cleveland.

MACHINE TOOLS (WOOD WORKING).

Atlantic Works, Inc. .....Philadelphia.

MARINE RAILWAYS, BUILDERS OF

Crandall & Son, H. I. .....East Boston, Mass.

MATTRESSES, CUSHIONS, BEDDING.

Fogg, M. W. .....New York.
Siegel Cooper Co .....New York.

MECHANICAL DRAFT FOR BOILERS.

American Ship Building Co.....Cleveland.
Bloomsburg & Co., H. .....Baltimore, Md.
Detroit Ship Building Co.....Detroit.
Sturtevant, B. F. Co.....Boston.

METALLIC PACKING.

Katzenstein, L. & Co. .....New York.
U. S. Metallic Packing Co. .....Philadelphia.

METAL POLISH.

Bertram's Oil Polish Co.....Boston.

MOTORS, GENERATORS—ELECTRIC.

Elwell-Parker Electric Co.....Cleveland.
General Electric Co.....Schenectady, N. Y.
Sturtevant, B. F. Co.....Boston
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

NAUTICAL INSTRUMENTS.

Bliss, John & Co. .....New York.
Ritchie, E. S. & Sons .....Brookline, Mass.

NAUTICAL SCHOOLS.

Chicago Nautical School. ..... Chicago.
Gould's Navigation School..... Cleveland.
McNevin's Navigation School..... Detroit
McNevin's Navigation School.....San Francisco.
Seattle Nautical School .....Seattle, Wash.

NAVAL ARCHITECTS.

Hynd, Alexander..... Cleveland.
Kidd, Joseph ..... Duluth, Minn.
Lovejoy, H. O ..... Buffalo.
Matteson & Drake.....Philadelphia.
Mosher, Chas. D.....New York.
Nacey, James ....Cleveland.
Newman & Merryweather.....New York
Rice, Henry..... ..... Buffalo.
Sadler, Perkins & Field .....New York.
Steel, Adam .....Cleveland.
Wood, W. J. .....Chicago.

OAKUM.

DeGrauw, Aymar & Co. .....New York.
Stratford Oakum Co. .....Jersey City, N. J.

OIL FOR PAINTING.

Sipe & Co., James B.....Allegheny, Pa.

OILS AND LUBRICANTS.

Dixon Crucible Co., Joseph .....Jersey City, N. J.
Standard Oil Co. .....Cleveland.

PACKING.

American Steam Packing Co.....Boston
Crane Co. .....Chicago.
Jenkins Bros. .....New York.
Katzenstein, L. & Co. .....New York.
New York Belting & Packing Co. .....New York.
United States Metallic Packing Co...Philadelphia.

PAINTS.

Baker, Howard H. & Co.....Buffalo.
Detroit Varnish Co. ..... Detroit
Detroit White Lead Works..... Detroit.
New Jersey Zinc Co. ..... New York.
Sipe & Co., James B.... .....Allegheny, Pa.
Upson-Walton Co. .....Cleveland.

PATENT ATTORNEYS.

Thurston & Bates .....Cleveland.

PATTERN SHOP MACHINERY.

Atlantic Works, Inc. .....Philadelphia.

PILE DRIVING AND SUBMARINE WORK.

Buffalo Dredging Co .... Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co.... Chicago.
Dunbar & Sullivan Dredging Co..... Buffalo.
Fitz-Simons & Connell Co..... Chicago.
Lake Erie Dredging Co. ..... Buffalo.
Smith Co., L. P. & J. A .. .. Cleveland,
Starke Dredge & Dock Co., C. H.....Milwaukee.

PIPE, WROUGHT IRON.

Bourne-Fuller Co. .....Cleveland.
Crane Co. .....Chicago.
Macbeth Iron Co.....Cleveland.

PLANING MILL MACHINERY.

Atlantic Works, Inc. .....Philadelphia.

PLATES—SHIP, STRUCTURAL, ETC.

Bourne-Fuller Co..... Cleveland.

PLUMBING, MARINE.

Reilly Repair & Supply Co., James....New York.
Sands, Alfred B. & Son.....New York.

BUYERS' DIRECTORY OF THE MARINE TRADE.—Continued.

PNEUMATIC TOOLS.

Allen, John F. .....New York.

POLISH FOR METALS.

Bertram's Oil Polish Co.....Boston

PRESSURE REGULATORS.

Kieley & Mueller .....New York.
Ross Valve Co. .....Troy, N. Y.

PROPELLER WHEELS.

American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Fore River Ship & Engine Co.....Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Hyde Windlass Co. .....Bath, Me.
Jenks Ship Building Co.....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
Maryland Steel Co.....Sparrow's Point, Md.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co Newport News, Va.
Phosphor Bronze Smelting Co., Ltd. ..Philadelphia.
Risdon Iron Works.....San Francisco.
Roelker, H. B. .....New York.
Sheriffs Mfg. Co. .....Milwaukee.
Superior Shipbuilding Co ..... Superior, Wis
Thropp & Sons Co., J. E. .....Trenton, N. J.
Trout, H. G. .....Buffalo
United States Ship Building Co.....New York.

PROJECTORS, ELECTRIC.

Elwell-Parker Electric Co.....Cleveland.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

PUMPS FOR VARIOUS PURPOSES.

Blake, Geo. F., Mfg. Co.....New York.
Great Lakes Engineering Works.....Detroit.
Kingsford Foundry & Machine Wks. Oswego, N. Y.
"Long-Arm" System Co.....Cleveland.

PUNCHES, RIVETERS, SHEARS.

Allen, John F.....New York

RANGES.

Russell & Watson .....Buffalo.
Siegel Cooper Co. ..... New York

REFRIGERATING APPARATUS.

Roelker, H. B. .....New York.

REGISTER FOR CLASSIFICATION OF VESSELS.

Great Lakes Register .....Cleveland
Record of American & Foreign Shipping.New York.

RIVETING MACHINES.

Allen, John F .....New York.

RIVETS, STEEL, FOR SHIPS AND BOILERS.

Bourne-Fuller Co. .....Cleveland.

SAFETY VALVES.

American Steam Gauge Co. .....Boston.
Ashton Valve Co. .....Boston.
Crane Co ..... Chicago
Hayden Mfg. Co., N. L. .....Columbus, O.
Lunkenheimer Co.....Cincinnati.

SAIL MAKERS.

Baker, Howard H. & Co. .....Buffalo.
Upson-Walton Co. .....Cleveland.
Wilson & Silsby .....Boston.

SALVAGE COMPANIES.

See Wrecking Companies.

SCHOOLS, NAUTICAL.

Chicago Nautical School..... Chicago.
Gould's Navigation School.....Cleveland.
McNevin's Navigation School ..... Detroit
McNevin's Navigation School.....San Francisco.
Seattle Nautical School ..... Seattle, Wash.

SEARCH LIGHTS.

Elwell-Parker Electric Co.....Cleveland.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

SHEARS.

See Punches, Rivets, and Shears.

SHIP AND BOILER PLATES AND SHAPES.

Bourne-Fuller Co. .....Cleveland.

SHIP BUILDERS.

American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Buffalo Dry Dock Co..... Buffalo.
Cramp, Wm. & Sons.....Philadelphia.
Craig Ship Building Co.....Toledo, O.
Chicago Ship Building Co.....Chicago.
Detroit Ship Building Co. .....Detroit.
Fore River Ship & Engine Co. .....Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Jenks Ship Building Co.....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Manitowoc Dry Dock Co. .....Manitowoc, Wis.
Maryland Steel Co.....Sparrow's Point, Md.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co Newport News, Va.
Risdon Iron Works.....San Francisco.
Roach's Ship Yard .....Chester, Pa.
Shipowners Dry Dock Co. .....Chicago.
Smith & Son, Abram .....Algonac, Mich.
United States Ship Building Co.....New York.
Willard, Chas. P. & Co.....Chicago.

SHIP CHANDLERS.

Baker, Howard H. & Co. .....Buffalo.
Reilly Repair & Supply Co., James....New York.
Upson-Walton Co. .....Cleveland.

SHIP LANTERNS AND LAMPS.

Russell & Watson .....Buffalo.

SHIP TIMBER.

Martin-Barriss Co ..... Cleveland
Shurick, F. S. ..... New York.

SMOOTH-ON COMPOUND, FOR REPAIRS.

Smooth-On Mfg. Co. .....Jersey City, N. J.

STAYBOLTS, IRON OR STEEL, HOLLOW, OR, SOLID.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

STEAM VESSELS FOR SALE.

Elwell, Jas. W. & Co. .....New York.
Gilchrist & Co., C. P..... Cleveland
Holmes, Samuel .....New York.
McCarthy, T. R. .....Montreal, Can.
Moffat & Son ..... San Francisco
Newman & Merryweather.....New York
Weeks, F. H. .....New York.

STEAMSHIP LINES, PASS. AND FREIGHT.

American Line .....New York.
International Mercantile Marine Co .. Philadelphia.
Pere Marquette R. R. & S. S. Line.....Milwaukee.
Red Star Line .....New York.

STEEL CASTINGS.

Seaboard Steel Casting Co. .....Chester, Pa.
Macbeth Iron Co.....Cleveland.

STEERING APPARATUS.

American Ship Building Co.....Cleveland.
Chase Machine Co.....Cleveland.
Dake Engine Co. .....Grand Haven, Mich.
Detroit Ship Building Co.....Detroit.
Hyde Windlass Co. .....Bath, Me.
Jenks Ship Building Co.....Port Huron, Mich.
Moulton Steering Engine Co..... New York.
Pawling & Harnischfeger ..... Milwaukee
Sheriffs Mfg. Co. .....Milwaukee.

STOCKS, BONDS, SECURITIES.

Fahey & Co. .....Cleveland.

SUBMARINE DIVING APPARATUS.

Morse & Son, A. J. .....Boston.
Schrader's Son, A. .....New York.

SURVEYORS, MARINE.

Gaskin, Edward .....Buffalo.
Hynd, Alexander .....Cleveland.
Lovejoy, H. O..... Buffalo.
Matteson & Drake ..... Philadelphia.
Nacey, James .....Cleveland.
Newman & Merryweather.....New York
Rice, Henry.....Buffalo.
Steel, Adam .....Cleveland.
Wood, W. J. .....Chicago.

TESTS OF MATERIALS.

Hunt, Robert W. & Co. .....Chicago.
Pittsburg Testing Laboratory Ltd. .....Pittsburg.

TILING, INTERLOCKING RUBBER.

New York Belting & Packing Co. .....New York.

TOOLS, METAL WORKING, FOR SHIP AND ENGINE WORKS.

Allen, John F. .....New York.
Watson-Stillman Co. .....New York.

TOOLS, WOOD WORKING.

Atlantic Works, Inc. .....Philadelphia.

TOWING MACHINES.

American Ship Windlass Co.....Providence, R. I.
Chase Machine Co. .....Cleveland.

TOWING COMPANIES.

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Midland Towing & Wrecking Co., Ltd.Midland, Ont.

TRAPS, STEAM.

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Lunkenheimer Co. ..... Cincinnati.
Sturtevant Co., B F, Jamaica Plain.....Boston.

TRUCKS.

Boston & Lockport Block Co. .....Boston.

TUBING, SEAMLESS.

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VALVES, STEAM SPECIALTIES, ETC.

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Ashton Valve Co. .....Boston.
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Jenkins Bros. .....New York.
Kieley & Mueller .....New York.
Lunkenheimer Co. ..... Cincinnati.
Mooers & Co, H..... Milwaukee.
Ross Valve Co. .....Troy, N. Y.

VALVES FOR WATER AND GAS.

Ross Valve Co. .....Troy, N. Y.

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Detroit White Lead Works..... Detroit.
New Jersey Zinc Co.....New York.
Also Ship Chandlers.

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Brown & Co. .....Buffalo.
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Fleming & Co., P. H. .....Chicago
Gilchrist & Co, C. P..... Cleveland
Hall & Root .....Buffalo.
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McCarthy, T. R. .....Montreal.
Moffat & Son..... San Francisco.
Newman & Merryweather.....New York
Mitchell & Co. ..... Cleveland
Prindiville & Co ..... Chicago.
Richardson, W. C. .....Cleveland.
Sullivan, D. & Co. .....Chicago.
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Ashton Valve Co. .....Boston.
Lunkenheimer Co. ..... Cincinnati.

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American Ship Windlass Co.....Providence, R. I.
American Ship Building Co. .....Cleveland.
Hyde Windlass Co. .....Bath, Me.
Jenks Ship Building Co. .....Port Huron, Mich.

WINCHES.

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Drein, Thos. & Son .....Wilmington, Del.
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No. 22, Lake Shore Lim...	*2:12am	*2:20am
No. 20, Chi & Cleve Ex....	*7:20am	.....
No. 28, N Y & Bost Ex....	*7:40am	*8:00am
No. 40, Toledo & Buff Ac.	†10:10am	†10:40am
No. 32, Fast Mail	*11:25am	*11:30am
No. 48, Ac via Sandusky..	11:40pm	..
No. 44, Cleve. & N. Y Sp.	.....	*3:00pm
No. 46, Southwestern Ex.	....	*3:10pm
No. 116, Conneaut Accom	.....	†4:30pm
No. 6, Lim Fast Mail....	*5:40pm	*5:45pm
No. 26, 20th Cent Lim.....	*7:40pm	*7:43pm
No. 10, C., N Y & B Sp....	*7:30pm	*7:50pm
No. 16, New Eng Ex.....	*10:30pm	*10:35pm
No. 2, Day Express.....	†9:10pm	†9.25pm
No. 126, Norwalk Accom.	†8:10am	.....

Westward.	Arrive from East.	Depart West.
No. 11, Southwestern Lim	*3:20am	.....
No. 7, Day Express.	.....	†6:00am
No. 15, Bost & Chi Sp.....	*3:05am	*3:15am
No. 19, Lake Shore Lim..	*7:05am	*7:15am
No. 23, Western Express.	*10:30am	*10:35am
No. 29, Southwestern Sp.	‡11:10am	....
No. 31, U S Express.. ...	‡11:55am	‡12:05am
No. 33, Southwestern Ex	*12:25pm	.... ..
No. 133, Cleve & Det Ex..	....	*12:45pm
No. 47 Accomodation.....	†11.00am	†3:00pm
No. 141, Sandusky Accom.	.....	†3:10pm
No. 43, Fast Mail	*4:35pm	*4:40pm
No. 127, Norwalk Accom..	.. ..	†5:10pm
No. 37, Pacific Express...	*6:50pm	*7:20pm
No. 3, Fast Mail Lim.....	*10:50pm	*10:55pm
No. 115, Conneaut Accom.	*8:30am	.....

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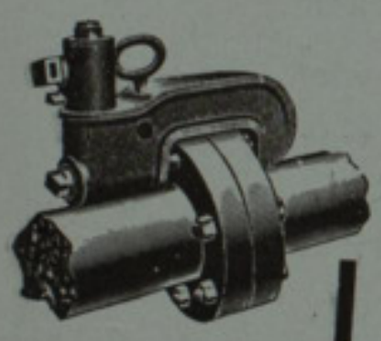

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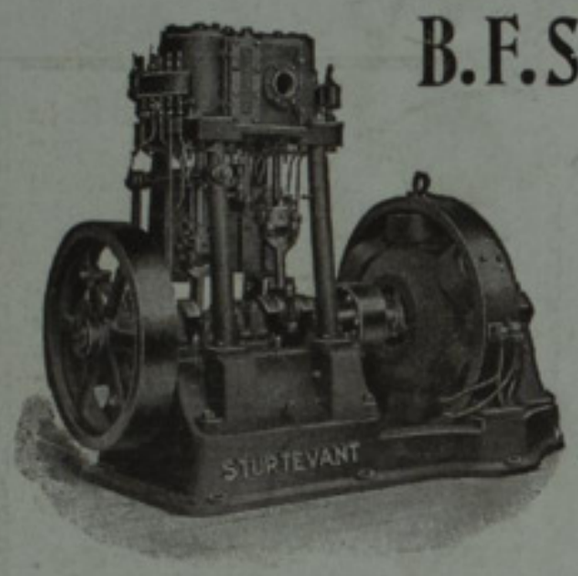

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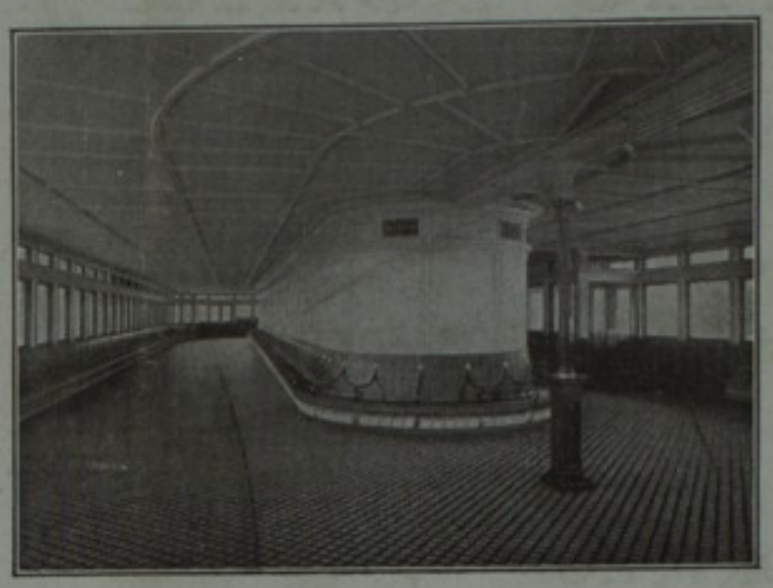

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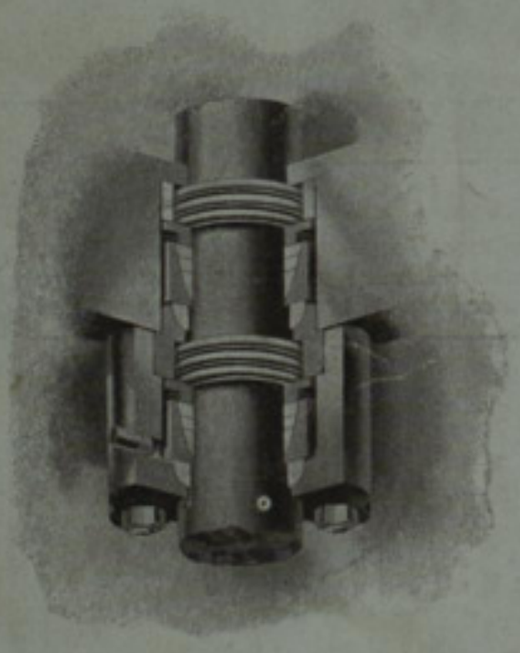

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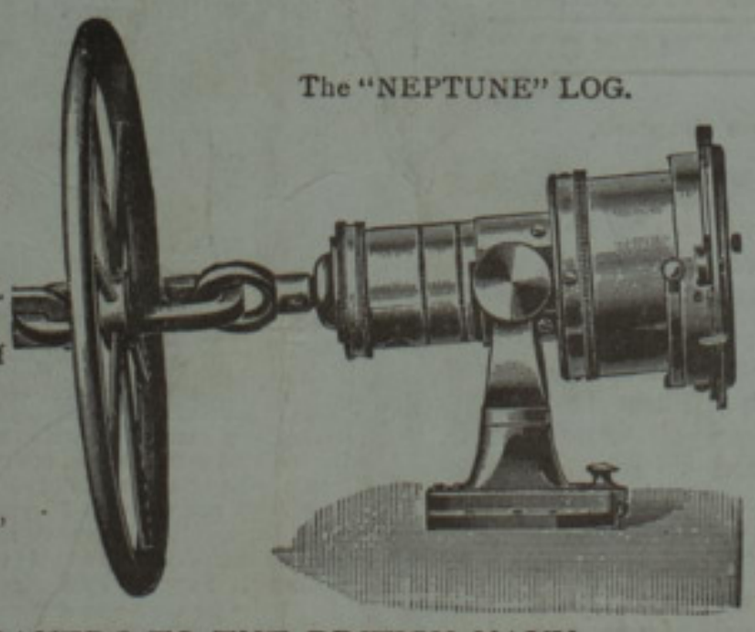

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WITH WHICH IS CONSOLIDATED
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[WEEKLY.
[ESTABLISHED, 1878.

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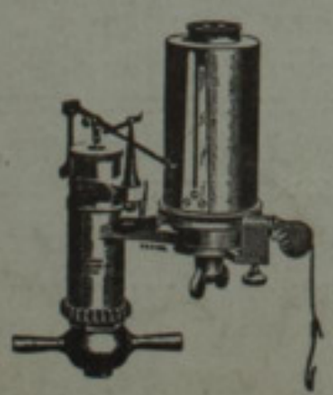

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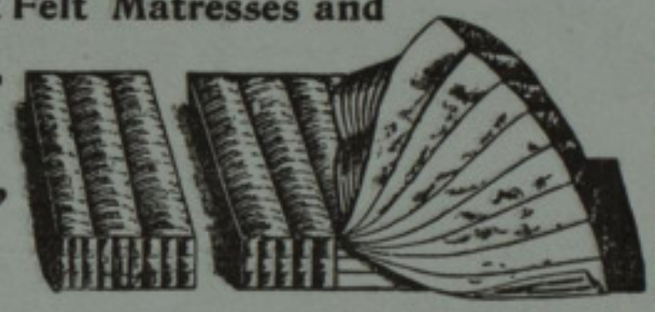

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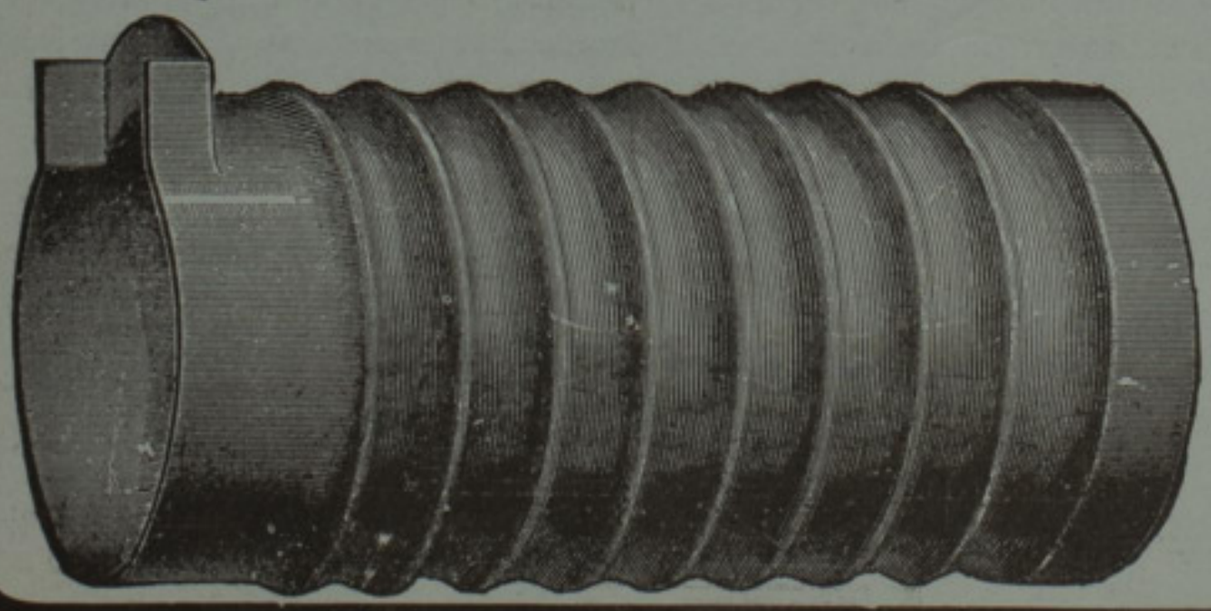

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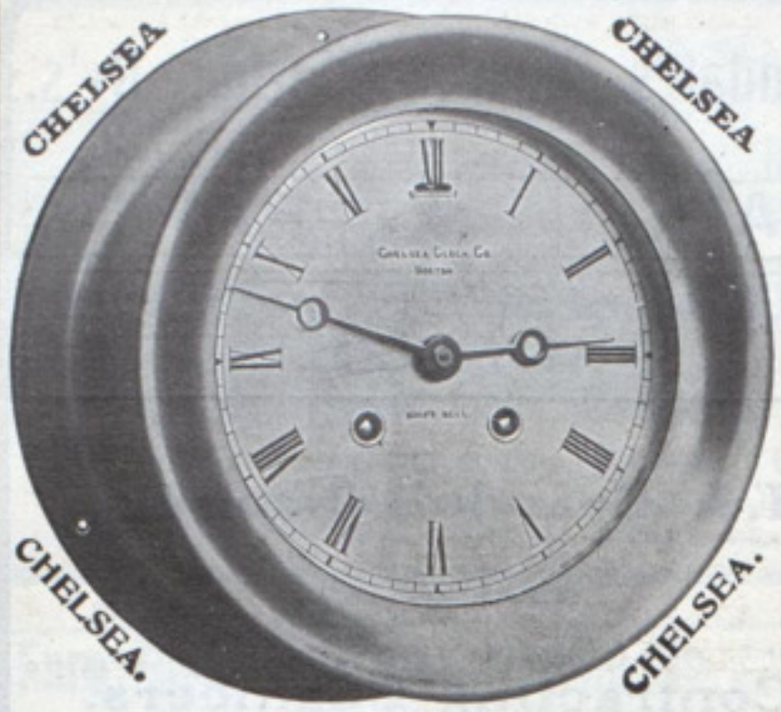

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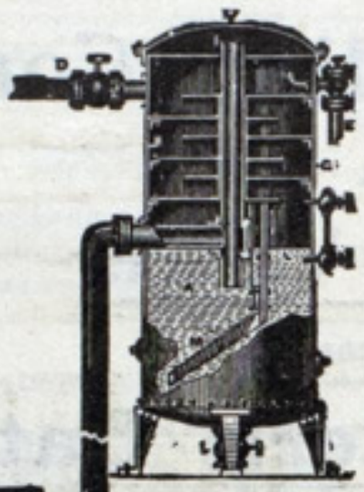

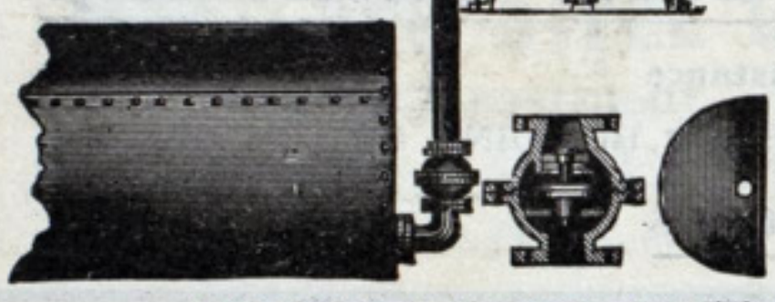

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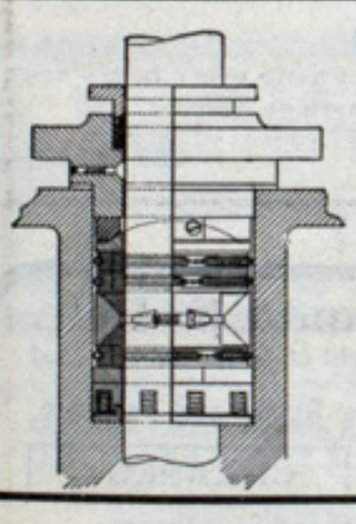

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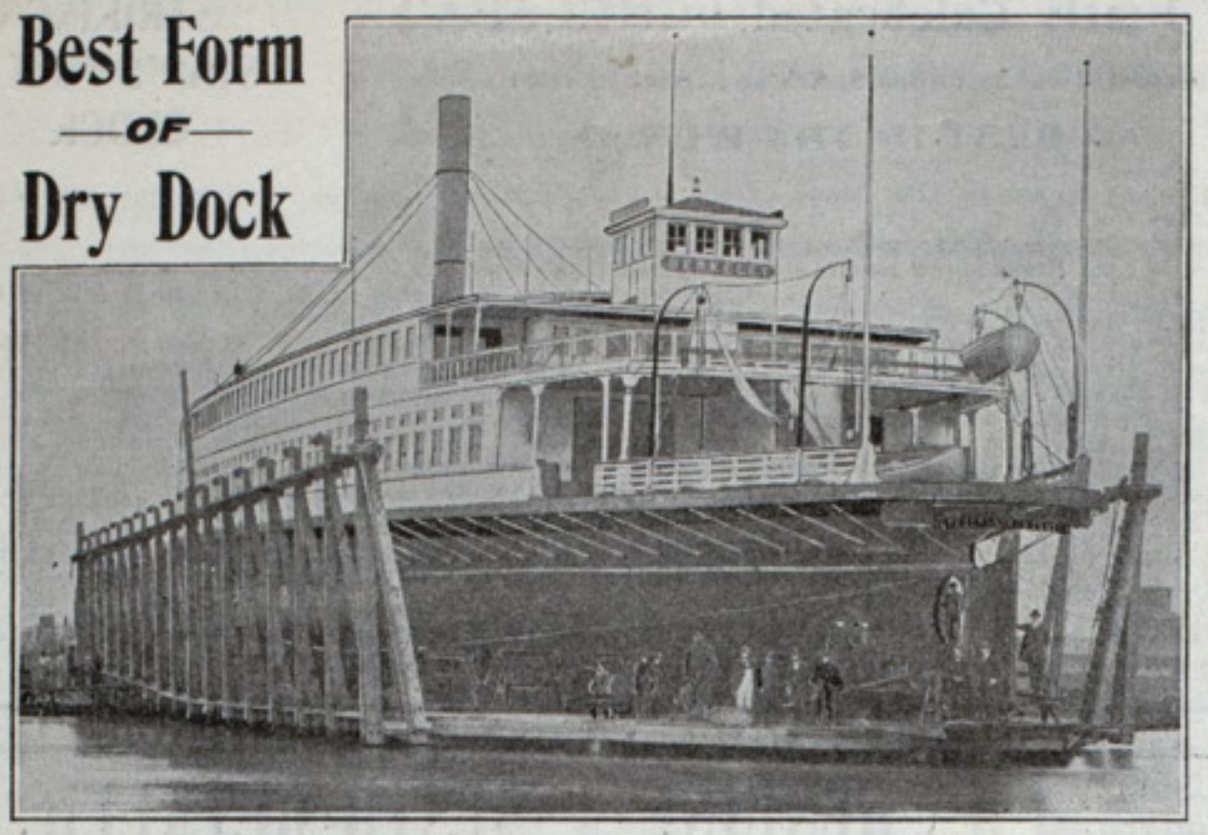

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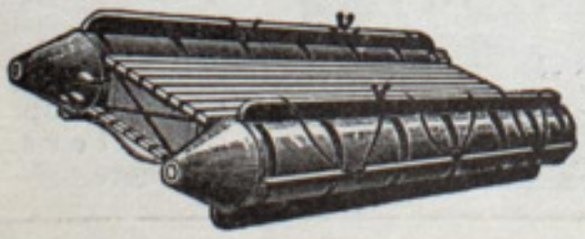

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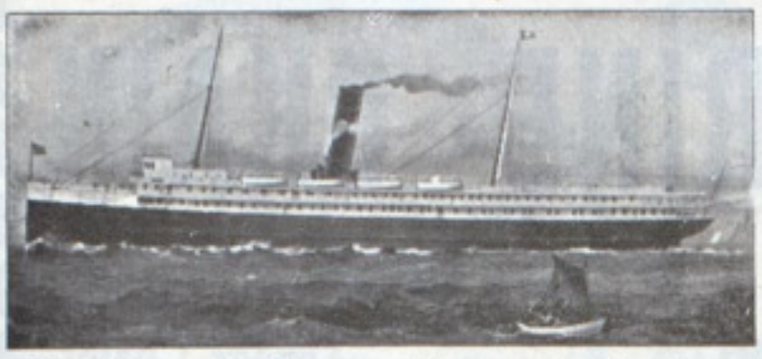

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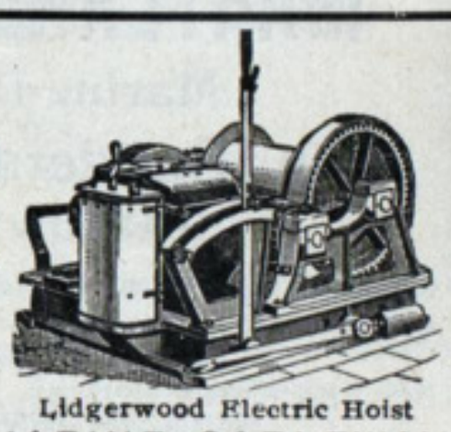

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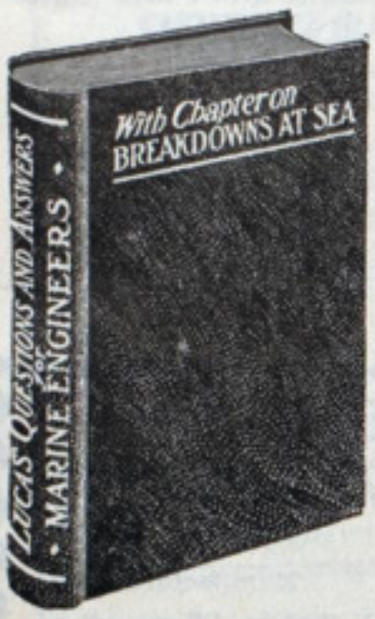

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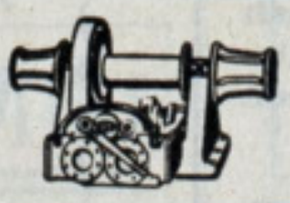

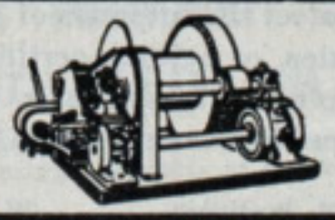

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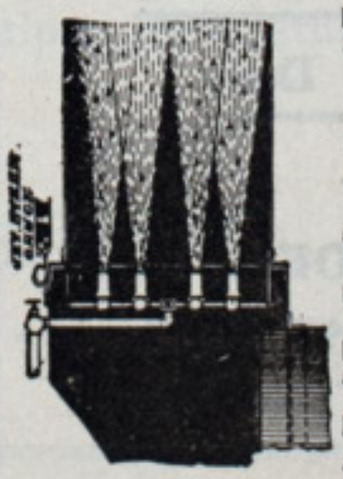

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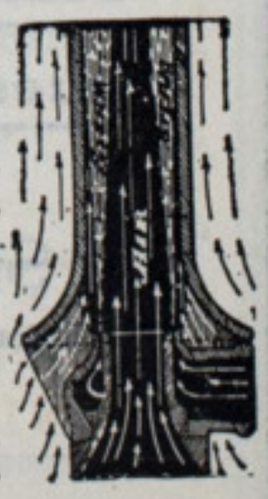

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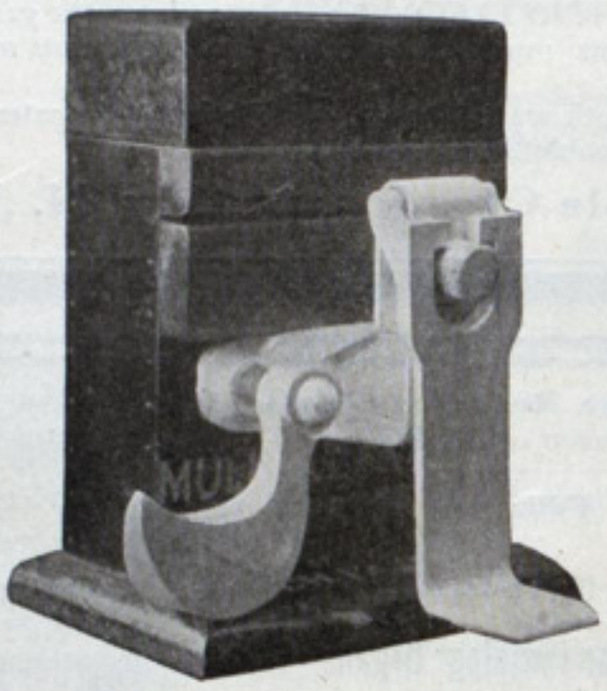

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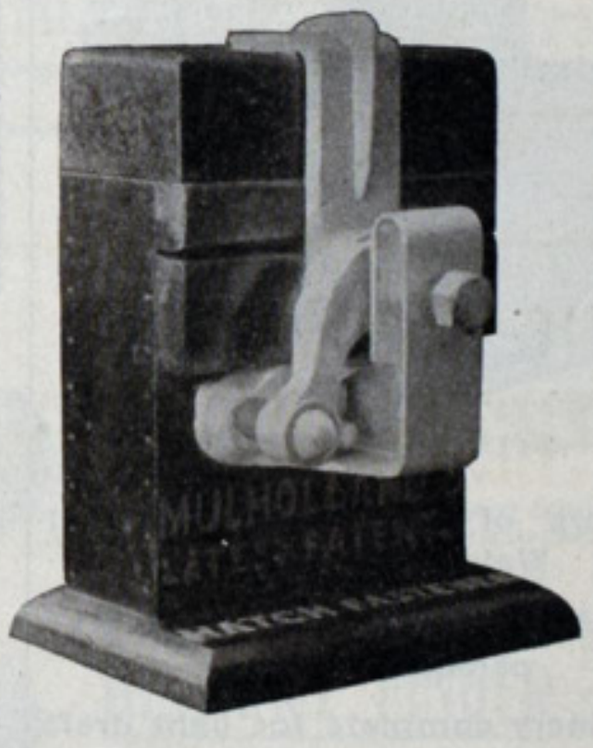

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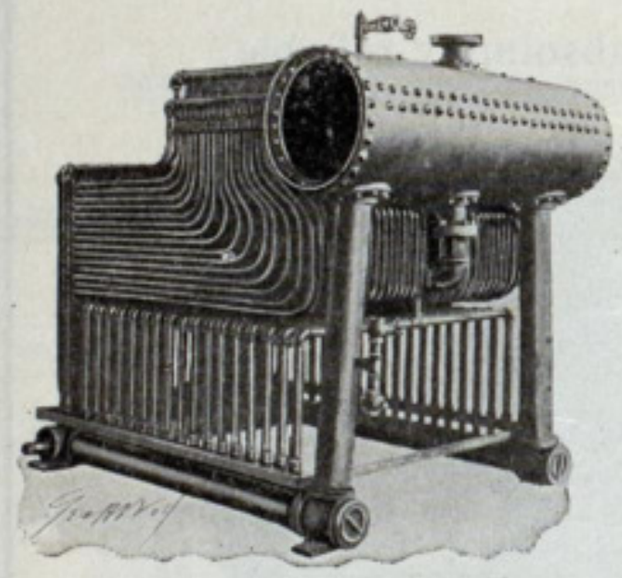

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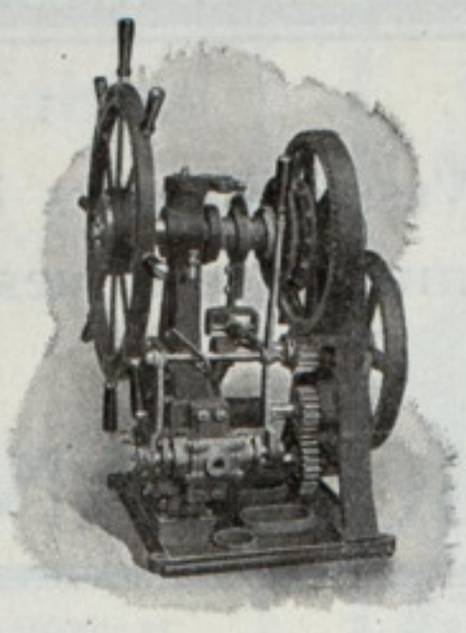

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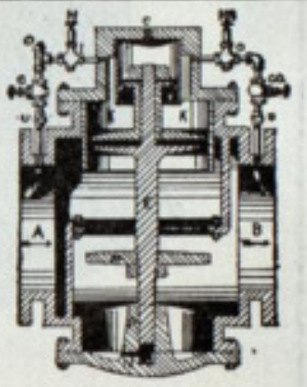

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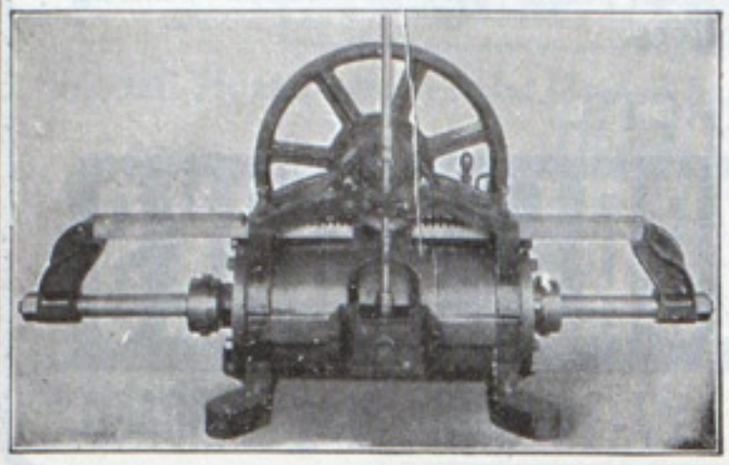

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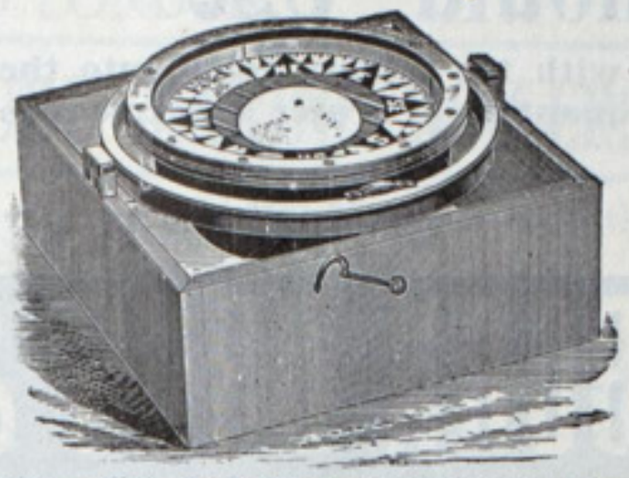

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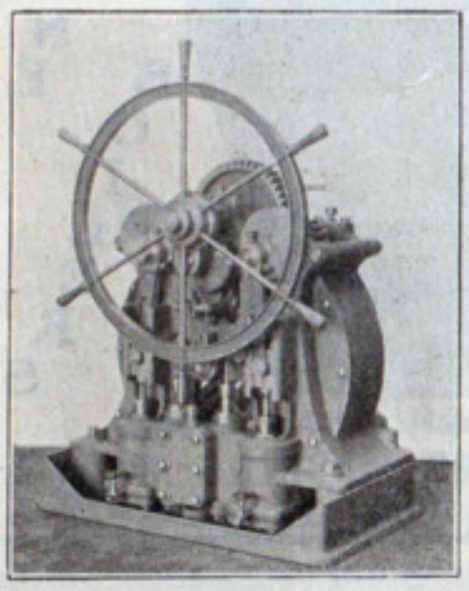

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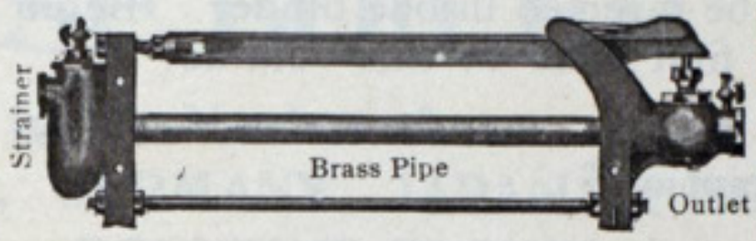

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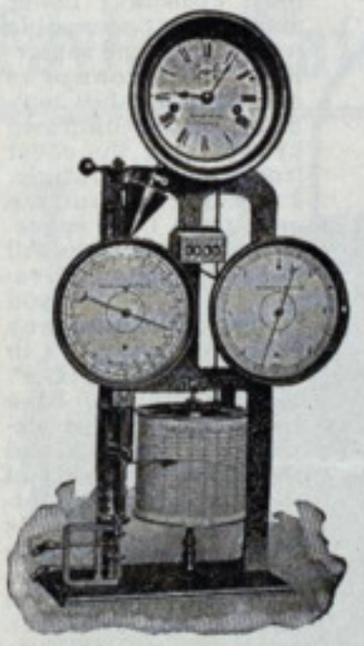

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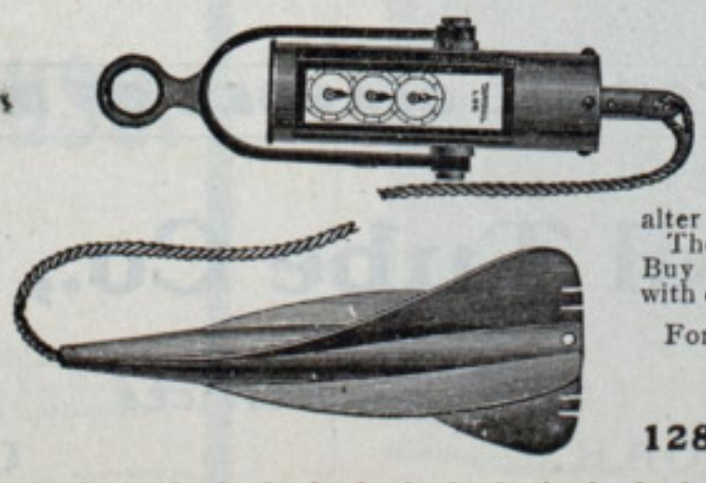

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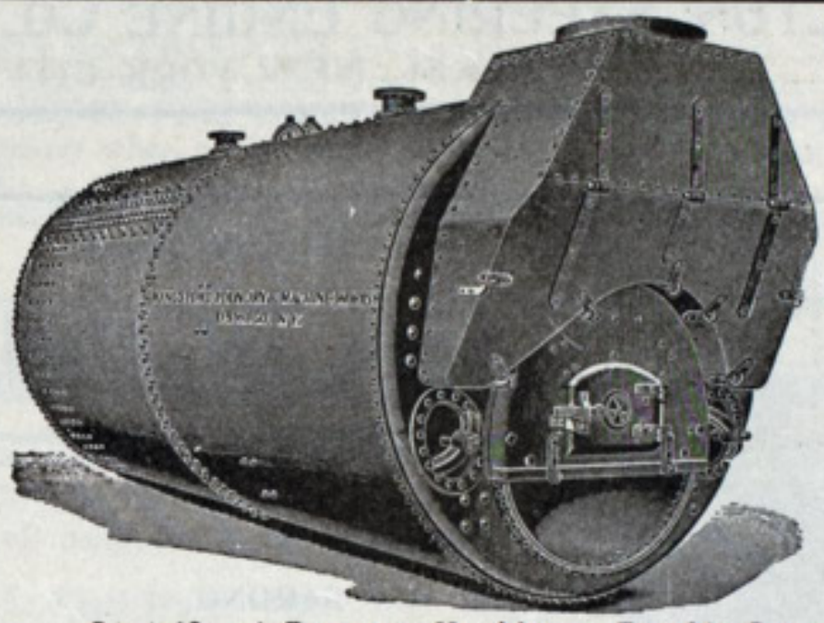

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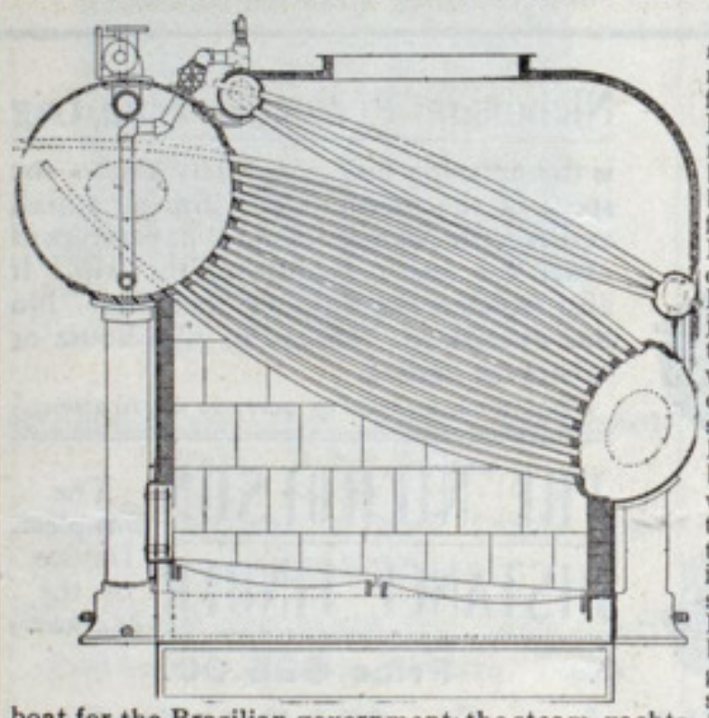

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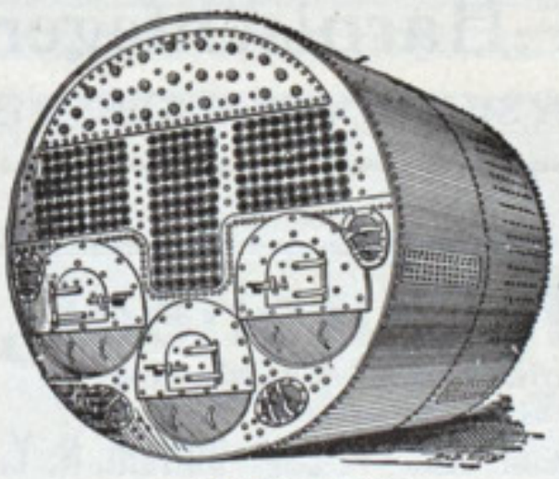

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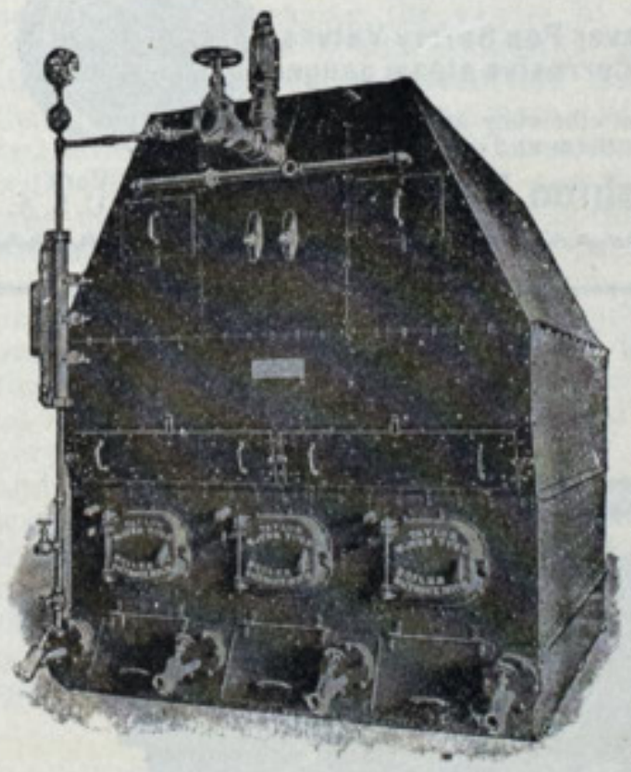

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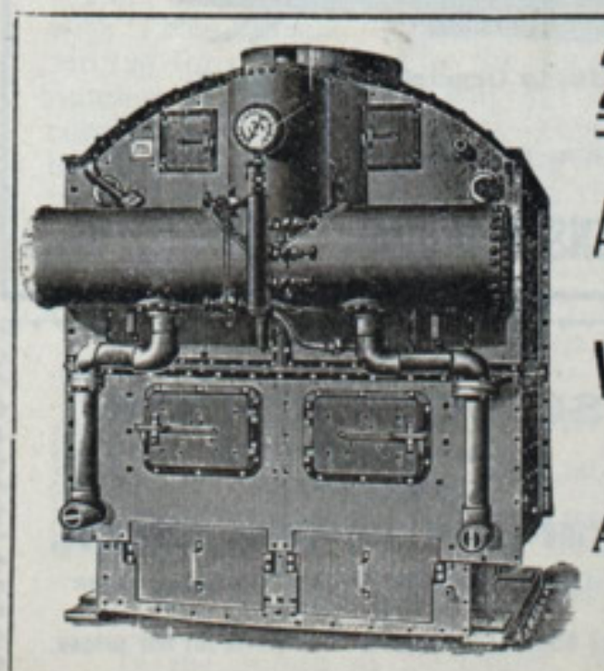

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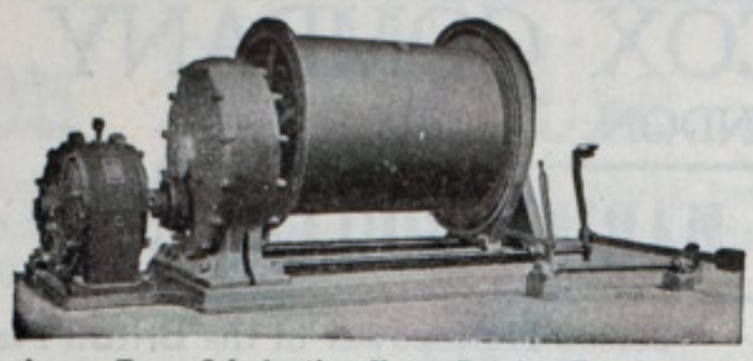

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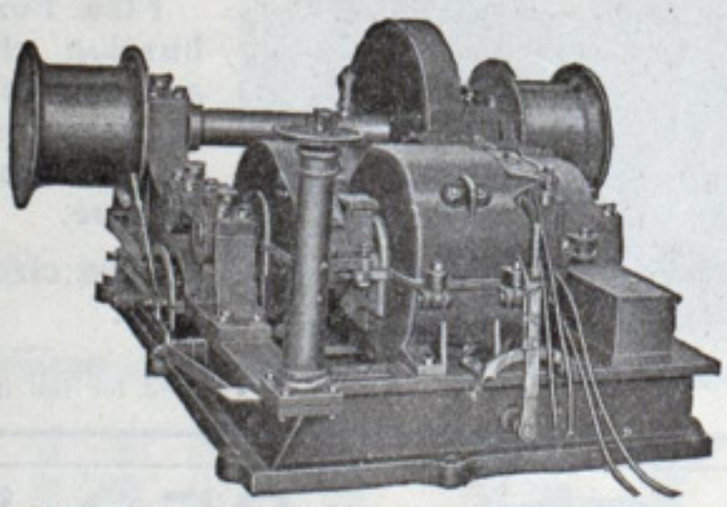

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